

CA20N  
EAB  
-H26



Ontario

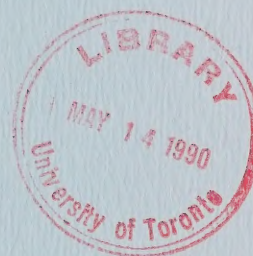
# ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 198

DATE: Thursday, May 3rd, 1990

BEFORE: A. KOVEN, Chairman

E. MARTEL, Member




FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

**EARR**  
ASSOCIATES &  
REPORTING INC.

(416) 482-3277

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4



Digitized by the Internet Archive  
in 2023 with funding from  
University of Toronto

<https://archive.org/details/31761116524448>



CA20N  
EAB  
-H26



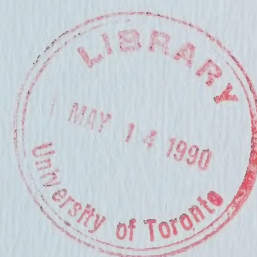
# ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 198

DATE: Thursday, May 3rd, 1990

BEFORE: A. KOVEN, Chairman

E. MARTEL, Member



FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

**FARR &  
ASSOCIATES**  
REPORTING INC.

(416) **482-3277**

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4







HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL  
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR  
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental  
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental  
Assessment for Timber Management on Crown  
Lands in Ontario;

- and -

IN THE MATTER OF a Notice by the  
Honourable Jim Bradley, Minister of the  
Environment, requiring the Environmental  
Assessment Board to hold a hearing with  
respect to a Class Environmental  
Assessment (No. NR-AA-30) of an  
undertaking by the Ministry of Natural  
Resources for the activity of timber  
management on Crown Lands in Ontario.

-----  
Hearing held at the Ramada Prince Arthur  
Hotel, 17 N. Cumberland Street, Thunder Bay,  
Ontario on Thursday, May 3rd, 1990,  
commencing at 8:00 a.m.

-----  
VOLUME 198

BEFORE:

MRS. ANNE KOVEN  
MR. ELIE MARTEL

Chairman  
Member







A P P E A R A N C E S

MR. V. FREIDIN, Q.C.)	
MS. C. BLASTORAH )	MINISTRY OF NATURAL
MS. K. MURPHY )	RESOURCES
MS. Y. HERSCHER )	
MR. B. CAMPBELL )	
MS. J. SEABORN )	MINISTRY OF ENVIRONMENT
MS. B. HARVIE )	
MR. R. TUER, Q.C.)	ONTARIO FOREST INDUSTRIES
MR. R. COSMAN )	ASSOCIATION and ONTARIO
MS. E. CRONK )	LUMBER MANUFACTURERS'
MR. P.R. CASSIDY )	ASSOCIATION
MR. H. TURKSTRA	ENVIRONMENTAL ASSESSMENT
	BOARD
MR. E. HANNA )	ONTARIO FEDERATION OF
DR. T. QUINNEY )	ANGLERS & HUNTERS
MR. D. HUNTER )	NISHNAWBE-ASKI NATION
MS. N. KLEER )	and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI)	
MS. M. SWENARCHUK )	FORESTS FOR TOMORROW
MR. R. LINDGREN )	
MR. P. SANFORD )	KIMBERLY-CLARK OF CANADA
MS. L. NICHOLLS)	LIMITED and SPRUCE FALLS
MR. D. WOOD )	POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF
	LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA
	LTD.
MR. Y. GERVAIS)	ONTARIO TRAPPERS
MR. R. BARNES )	ASSOCIATION
MR. R. EDWARDS )	NORTHERN ONTARIO TOURIST
MR. B. McKERCHER)	OUTFITTERS ASSOCIATION







APPEARANCES: (Cont'd)

MR. L. GREENSPOON)	NORTHWATCH
MS. B. LLOYD )	
MR. J.W. ERICKSON, Q.C.)	RED LAKE-EAR FALLS JOINT
MR. B. BABCOCK )	MUNICIPAL COMMITTEE
MR. D. SCOTT )	NORTHWESTERN ONTARIO
MR. J.S. TAYLOR)	ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL)	GREAT LAKES FOREST
MR. S.M. MAKUCH )	
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE )	GRAND COUNCIL TREATY #3
MS. S.V. BAIR-MUIRHEAD )	
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY





APPEARANCES: (Cont'd)

MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON
MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION





I N D E X   O F   P R O C E E D I N G S

<u>Witness:</u>	<u>Page No.</u>
<u>JAMES WADDELL,</u> <u>MALCOLM SQUIRES,</u> <u>JAMES RODERICK GEMMELL,</u> <u>MURRAY FERGUSON,</u> <u>PETER MITCHELL MURRAY, Recalled</u> <u>BRIAN NICKS, Sworn</u>	34898
Direct Examination by Ms. Cronk	34904





I N D E X     O F     E X H I B I T S

<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
1137	Statement of Evidence re OFIA/OLMA Panel No. 8.	34900
1138	Package of Interrogatories MNR Nos. 1 and 3; MOE Nos. 5 and 6; FFT Nos. 4, 6, 13, 15-21, 23, 24, 25, 27, 28 and 30 re OFIA/OLMA Panel No. 8.	34901
1139	Hard copy of materials to be referred to by Mr. Waddell in his evidence.	34901
1140	Photocopy of overhead to be used by Mr. Squires in his evidence.	34901
1141	Hard copies of overheads to be used by Mr. Gemmell in his evidence.	34902
1142	Hard copy of overheads to be used by Mr. Nicks in his evidence.	34902
1143A	Two original copies of photographs re site preparation.	34903
1143B (reserved)	Original copies of photographs to be referred to in two tending and renewal copies of statement of evidence for Panel 8.	34903
1144	Document entitled: Forest Management Agreements, fourth five-year review 1983/1988.	349567
1145	Hard copy of overhead re Canadian Pacific case study stocking results second and fifth year.	35077





1 ---Upon commencing at 8:00 a.m.

2 MADAM CHAIR: Good morning. Please be  
3 seated.

4 Ms. Cronk?

5 MS. CRONK: Good morning.

6 MADAM CHAIR: The Board would like to  
7 thank the panel members for speeding up their  
8 appearance before the Board because of the unavoidable  
9 delays in Panel 7.

10 MS. CRONK: That is quite different than  
11 what they said to me, Madam Chair, so I thank you for  
12 that.

13 Good morning, Mr. Martel, Madam Chair -  
14 the last remark of course was quite facetious - as you  
15 know, the next panel on behalf of the Industry concerns  
16 Panel 8. It is Panel 8, it concerns renewal of the  
17 timber resource. Some of the panel members have  
18 appeared as witnesses previously on one or more panels  
19 and for the benefit of the Board those individuals are:  
20 Mr. Jim Waddell on the Board's far right, Mr. Max  
21 Squires, Mr. Rod Gemmell, Mr. Peter Murray and more  
22 recently Mr. Murray Ferguson who appeared on the  
23 tending panel.

24 To deal with, if I may, those witnesses  
25 just for the moment, you will recall that they were

1 previously qualified before you as being professional  
2 foresters and managers of considerable experience in  
3 the area of the undertaking. Their particular  
4 expertise in renewal activities was not at that time  
5 emphasized. It is of course the focus of their  
6 evidence on this panel.

7 Mr. Murray Ferguson, introduced to you on  
8 the tending panel and who is yet to give his evidence  
9 with respect to tending, has considerable expertise in  
10 both tending and renewal activities. The evidence will  
11 indicate that in his role as a professional forester  
12 with Canadian Pacific Forest Products Limited he has  
13 for over 10 years been actively involved in renewal  
14 activities.

15 There is, in addition, a new member of  
16 the panel who appears for the first time this morning,  
17 Mr. Brian Nicks to Mr. Waddell's left. His resume  
18 appears at page 10 of the Panel 8 statement of  
19 evidence. Mr. Nicks, like the other panel members is a  
20 professional forester, he's currently employed by E.B.  
21 Eddy Forest Products Limited as E.B. Eddy's  
22 silviculturalist.

23 He's held that position for some time in  
24 years. Prior to that he was employed by the Ontario  
25 Ministry of Natural Resources as a program forester in

1 jack pine for the northern forest development group and  
2 earlier still as unit forester for the Shining Tree  
3 Crown Management Unit in Gogama, Ontario.

4 In his position as silviculturalist with  
5 E.B. Eddy, very briefly, he among other matters  
6 provides technical guidance and expertise on  
7 silvicultural matters to the company including  
8 specifically on renewal and tending activities.

9 He manages the company's tree improvement  
10 programs for jack pine and larch, and he supervises the  
11 contracted production of all planting stock amongst  
12 other silviculturally related matters outlined in his  
13 curriculum vitae.

14 And I would ask that he, together with  
15 the other panel members, be accepted as experts in the  
16 area of renewal activities for the purpose of giving  
17 evidence on this panel specific to their areas of the  
18 undertaking, and I would ask that Mr. Nicks now be  
19 sworn.

20 MADAM CHAIR: Mr. Nicks could you please  
21 approach the Board.

22 JAMES WADDELL,  
23 MALCOLM SQUIRES,  
24 JAMES RODERICK GEMMELL,  
25 MURRAY FERGUSON,  
PETER MITCHELL MURRAY, Recalled  
BRIAN NICKS, Sworn



1 MS. CRONK: Madam Chair, Mr. Martel, you  
2 will hear from these witness on behalf of OFIA/OLMA  
3 about the Industry's view that renewal of the timber  
4 resource is essential and you will hear of the  
5 Industry's perspective on how that can be accomplished  
6 on the options available to Industry timber managers to  
7 carry out renewal activities both with respect to site  
8 preparation and regeneration.

9 You will receive evidence from this panel  
10 concerning the experience of Industry managers in  
11 carrying out renewal activities and the basis that that  
12 forms for those managers to make informed decisions  
13 concerning renewal activities.

14 You will hear evidence from the  
15 Industry's perspective timber renewal activities within  
16 both forest management agreement areas and Crown  
17 management unit areas have a direct impact on short and  
18 long-term wood supply, and you will hear as well of the  
19 Industry's perspective and position before you that  
20 flexibility in the professional context for trained  
21 unit managers and trained renewal experts is necessary  
22 in the future to effectively accomplish the renewal  
23 activities that are necessary to preserve the timber  
24 resource.

25 And if I could at this time file a number

1 of materials with respect to the evidence that this  
2 panel will be giving. The first is the statement of  
3 evidence concerning Panel 8. I wish to provide the  
4 Board at this time with one additional copy.  
5 Unfortunately, Madam Chair, in moving the materials  
6 down on rather short notice from Toronto this week, the  
7 extra two that we need were left behind. I will see  
8 that you have those Tuesday morning and at this time if  
9 we could provide you with one additional copy, I would  
10 ask that that be the next exhibit.

11 MADAM CHAIR: That is Exhibit 1137.

12 ---EXHIBIT NO. 1137: Statement of evidence re  
13 OFIA/OLMA Panel No. 8.

14 MS. CRONK: The next exhibit that  
15 I would ask be filed, Madam Chair, is a photocopy of  
16 numerous interrogatories that were received by this  
17 panel and to which response was made by this panel  
18 concerning their renewal evidence.

19 And I would ask that that be marked as a  
20 package as the next exhibit. And for the record those  
21 interrogatories and responses are as follows:

22 MNR Interrogatory Nos. 1 and 3, Ministry  
23 of Environment Interrogatories 5 and 6, Forests for  
24 Tomorrow Interrogatories - this is rather a long list -  
25 Nos. 4, 6, 13, 15 through 21 inclusive, 23, 24, 25, 27,

1 28 and 30. And I would ask that that be the next  
2 exhibit, Madam Chair.

3 MADAM CHAIR: That will be Exhibit 1138.

4 ---EXHIBIT NO. 1138: Package of interrogatories:  
5 MNR Nos. 1 and 3; MOE Nos. 5 and  
6 6; FFT Nos. 4, 6, 13, 15-21, 23,  
24, 25, 27, 28 and 30 re  
OFIA/OLMA Panel No. 8.

7 MS. CRONK: If I could have a moment,  
8 Madam Chair. (handed)

9 The next documents to be filed at this  
10 time, Madam Chair, relate to a series of materials to  
11 be referred to by Mr. Waddell by way of overheads and a  
12 photograph of certain slides to which he will be  
13 referring in the course of his evidence.

14 And if that could be the next exhibit.

15 MADAM CHAIR: Exhibit 1139.

16 MS. CRONK: (handed)

17 MADAM CHAIR: Thank you.

18 ---EXHIBIT NO. 1139: Hard copy of materials to be  
19 referred to by Mr. Waddell in his  
evidence.

20 MS. CRONK: The next package, Madam  
21 Chair, is a photocopy of an overhead to be used by Mr.  
22 Squires. If that could be the next exhibit.

23 MADAM CHAIR: Exhibit 1140.

24 MS. CRONK: (handed)

25 ---EXHIBIT NO. 1140: Photocopy of overhead to be used



1 by Mr. Squires in his evidence.

2 MS. CRONK: The next exhibit, Madam  
3 Chair, are overheads to be used by Mr. Gemmell during  
4 the course of his evidence.

5 MADAM CHAIR: Exhibit 1141.

6 MS. CRONK: (handed)

7 ---EXHIBIT NO. 1141: Hard copies of overheads to be  
8 used by Mr. Gemmell in his  
evidence.

9 MR. CRONK: The next package of materials  
10 to be used by this panel, Madam Chair, are overheads to  
11 be referred to by Mr. Nicks.

12 MADAM CHAIR: That's Exhibit 1142.

13 MS. CRONK: (handed)

14 ---EXHIBIT NO. 1142: Hard copies of overheads to be  
15 used by Mr. Nicks in his  
evidence.

16 MS. CRONK: The next materials that I  
17 would ask to file, Madam Chair, are two original copies  
18 of photographs of slides to be referred to by Mr. Nicks  
19 and in part Mr. Waddell during the course of their  
20 evidence.

21 And I would ask, if I could, that this  
22 exhibit be marked in two parts. If I could request  
23 that the first be Exhibit 1143A, these are two original  
24 copies of photographs regarding site preparation, and I  
25 would ask that B be reserved for the original copies

1 for the Board of additional photographs to be referred  
2 to, the copies of which are in the two tending and the  
3 two renewal copies of the statement of evidence that  
4 you will be receiving Tuesday morning, on route from  
5 Toronto. In short they are not here. So I will  
6 provide them to you Tuesday morning.

7 Mr. Nicks has the slides that he will be  
8 referring to in his evidence, but the originals will be  
9 forthcoming Tuesday morning if that's acceptable to the  
10 Board.

11 MADAM CHAIR: That is fine, Ms. Cronk.  
12 And that is Exhibit 1143A and B.

13 MS. CRONK: Thank you. These copies then  
14 are A. (handed)

15 ---EXHIBIT NO. 1143A: Two original copies of  
16 photographs re site preparation.

17 ---EXHIBIT NO. 1143B: Original copies of photographs to  
18 (reserved) be referred to in two tending and  
renewal copies of statement of  
evidence for Panel 8.

19 MS. CRONK: And for the assistance of the  
20 parties, Madam Chair, copies of the original  
21 photographs that I have just provided to the Board are  
22 contained in the package of overheads to be referred to  
23 by Mr. Waddell. That has already been marked and  
24 distributed.

25 And with that then, Mr. Martel, Madam

1 Chair, if I could turn to the panel.

2 DIRECT EXAMINATION BY MS. CRONK:

3 Q. And, Mr. Waddell, if I could start  
4 with you, sir. I understand that you will in summary  
5 form outline for the Board, in more detail than my  
6 opening remarks suggested, the issues to be addressed  
7 by your panel relative to renewal of the timber  
8 resource; is that correct?

9 MR. WADDELL: A. Yes, that's correct.

10 Q. All right. Could you do so now then?

11 A. Good morning, Madam Chair, Mr.  
12 Martel. The forest industry is directly involved in  
13 timber renewal on Crown lands across the area of the  
14 undertaking. We have eight position statements that I  
15 would like to introduce to you at this time and I would  
16 like to do so with overheads.

17 Q. As I understand it, Mr. Waddell,  
18 these position statements are also set out in the  
19 executive summary of your statement of evidence; is  
20 that correct?

21 A. That is correct.

22 Our No. 1 position statement is that the  
23 renewal of the timber resource is an essential and  
24 necessary part of a sound timber management program.

25 No. 2 is that an integrated relationship



1 exists between harvesting, renewal and other timber  
2 management activities. Harvesting is a vital step in  
3 the renewal process. No one activity must be viewed in  
4 isolation.

5 No. 3, timber renewal activities within  
6 both FMA areas, Crown management units have a direct  
7 impact on the short and long-term wood supply for the  
8 Industry.

9 No. 4, the choice of silvicultural  
10 systems and renewal methods to be used in a management  
11 unit is an evolutionary process that takes into  
12 consideration; first, the silvical characteristics of  
13 the species, second, the terrain, site and stand  
14 conditions of the unit; third, the wood supply factors  
15 present in the unit; and, fourth, the available  
16 resources.

17 The fifth position statement of the  
18 Industry is that given changing mill and end product  
19 demand and the diversity of forest types and site  
20 conditions prevalent in the area of the undertaking.

- 21 (a) flexibility and renewal activity  
22 decision-making on each management unit  
23 is essential; and,  
24 (b) it is critical that a broad range of  
25 cost-effective management alternatives

1 for renewal activities be available to  
2 the timber managers.

3 Our sixth position statement, the  
4 experience gained by the Industry over the years in  
5 carrying out renewal activities enables the Industry's  
6 timber managers to make informed decisions on timber  
7 resource management in site-specific areas.

8 No. 7, properly managed timber renewal  
9 activities are environmentally sound activities.

10 And, finally, there is a need for a  
11 revised timber production policy formulated jointly by  
12 the Ministry and the Industry to identify future  
13 regeneration levels and funding commitments necessary  
14 to meet the anticipated wood supply requirements.

15 Q. Mr. Waddell, will each of these  
16 position statements and the basis for them be dealt  
17 with by you and your other colleagues on this  
18 particular panel?

19 A. Yes, they will.

20 Q. Thank you. Could you begin then, Mr.  
21 Waddell, if you would please, by outlining to the Board  
22 in general terms the nature of the role of the Industry  
23 in renewal activities in the area of the undertaking?

24 A. Yes. As the Board has previously  
25 heard, Professor Armson was retained by the Minister of

1 Natural Resources in 1975 to assess the state of forest  
2 management in Ontario. His report entitled Forest  
3 Management in Ontario led directly to the initiation of  
4 the current forest management agreement program and in  
5 1980 five forest management agreements were signed.

6 In considering the role of the forest  
7 industry in timber management, Professor Armson  
8 postulated three propositions to serve as guiding  
9 principles in the future. These were:

10 First of all, that more effective  
11 management is likely when those concerned with the  
12 planning and implementation of harvesting operations  
13 also have the responsibility for full forest  
14 management.

15 Secondly, that more effective management  
16 is likely when those concerned primarily with the  
17 harvesting and utilization of forest crops have control  
18 over the location and choice of silvicultural practices  
19 especially those which will alter crop yields.

20 And third, that more effective management  
21 is likely when a large licensed area is treated as a  
22 single forest estate for management purposes.

23 The OFIA in its response to this proposal  
24 urged that an amendment to existing legislation be made  
25 which would enable forest management responsibilities

1 to be transferred to the Industry on certain Crown  
2 lands.

3 In the Industry's request we urged that  
4 there was three conditions essential to our proposal,  
5 and these were, very briefly, that: First of all,  
6 there must be a defined basis of tenure; secondly, that  
7 there would be suitable incentives provided to  
8 encourage the Industry to undertake the responsibility  
9 of management; and, third, that there be an effective  
10 process established that would monitor and review the  
11 Industry's achievement in management.

12 I would like to remind the Board at this  
13 time of the purpose again of forest management  
14 agreements. The purpose of a forest management  
15 agreement is to provide a continuous supply of forest  
16 products from certain designated lands to mills or mill  
17 of the FMA holder and to ensure that the forest on  
18 these lands are harvested and regenerated to produce  
19 successive crops of timber on a sustained basis. Thus,  
20 the proper harvesting and regeneration efforts are a  
21 central focus of FMAs. FMAs were the mechanism by  
22 which harvesting and renewal were integrated.

23 Prior to the FMAs this was not the case  
24 of course when Industry had the responsibility for  
25 harvesting and the Ministry for regeneration.



1 Transferring the renewal responsibilities  
2 to the Industry through the FMA process is a very  
3 logical step in that it achieved a linkage between  
4 harvesting and silvicultural operations, it made the  
5 one party, Industry, both accountable and responsible  
6 for harvesting and renewal and it also enabled Industry  
7 to utilize its experience in timber operations and our  
8 infrastructure and resources which were necessary to  
9 substantially increase renewal effort.

10 The contractual obligations of the FMA  
11 holder have already been explained to the Board by the  
12 Ministry and were introduced as Exhibit 580. I would  
13 like to refresh the Board on these obligations.

14 Again, I refer to Exhibit 580 introduced  
15 by the Ministry of Natural Resources. The contractual  
16 obligations of an FMA holder.

17 Q. Mr. Waddell, I am sorry to interrupt  
18 you. In using this overhead, does this form part of  
19 the package of overheads that have been marked as  
20 exhibits?

21 A. Yes, it does.

22 Q. I am sorry to interrupt.

23 A. One of the primary responsibilities  
24 of the FMA holders is to keep the production forest  
25 lands in the FMA agreement reforested as per the ground

1 rules.

2 Another obligation is to reforest certain  
3 classes of NSR lands that existed at the time the FMA  
4 was entered into. We also have the obligation to carry  
5 out fifth-year stocking assessments and report these to  
6 the Ministry. Any lands that the fifth-year assessment  
7 indicates have not met the ground rule stocking  
8 standards must be retreated at the company's cost.

9 We have the obligation to request the  
10 Ministry to carry out free to grow surveys on lands  
11 that we believe have met these criteria. We have the  
12 obligation to cut between 90 and 110 per cent of the  
13 maximum annual depletion over a five-year period for  
14 each working group, and there are penalties if we do  
15 not. And we have the obligation to reforest areas that  
16 the Minister feels brush may inhibit reforestation and  
17 he may order us to do so.

18 Q. Are those obligations, Mr. Waddell,  
19 reflected in all FMA agreements?

20 A. Yes, they are.

21 Q. For example, the Board has received  
22 in evidence a copy of two forms of FMA agreements that  
23 have been marked as exhibits, one pertains to the  
24 Pineland Forest management agreement area and one is a  
25 generic form of forest management agreement.

1 Are these obligations reflected in those  
2 documents?

3 A. Yes, they are.

4 Q. All right. Could you describe for  
5 the Board, please, if you would, the extent of the  
6 Industry's involvement in silvicultural activities,  
7 again obviously in the area of the undertaking?

8 A. Yes, in the area of the undertaking  
9 45 per cent of the Crown lands are covered by forest  
10 management agreements and in total there were 30 FMAs.  
11 I believe this has now been amalgamated, made to 28, so  
12 that the Industry is a major stakeholder in the renewal  
13 in the province.

14 In contrast to our considerable  
15 involvement in renewal on forest management agreement  
16 areas, on Crown management units the Industry has  
17 relatively little direct responsibility. This is the  
18 responsibility primarily of the Ministry of Natural  
19 Resources.

20 The exception to this occurs on Crown  
21 management units where some form of shelterwood cutting  
22 is being carried out and, in that case of course, the  
23 licensee carries that out and so he is directly  
24 involved in the regeneration effort.

25 The other exception in Crown management

1 units is that occasionally the licensee may be involved  
2 in a regeneration agreement for which he's carrying out  
3 certain aspects of the renewal work, but despite the  
4 fact that we do not have the responsibility for renewal  
5 on Crown management units, the Industry is extremely  
6 concerned about the management of Crown management  
7 units and the implementation of an effective management  
8 program on these units.

9 Our concern for this is obvious, in the  
10 sense that many of our mills rely heavily upon the  
11 Crown management units as a source of wood. In our own  
12 case, our Espanola pulp mill takes up to 50 per cent of  
13 its wood fiber from Crown management units.

14 In the case of smaller sawmills in  
15 Ontario, some derive almost 100 per cent of their wood  
16 supply from Crown management units. So very obviously  
17 we do have a direct interest in how well the Crown  
18 management units are managed.

19 Q. Will the involvement of the interest  
20 of the Industry in Crown management units be dealt with  
21 in more detail in the evidence of you or any of the  
22 other panel members?

23 A. Yes, Mr. Peter Murray will be  
24 speaking more fully to this later.

25 Q. What, Mr. Waddell, from the



1 Industry's perspective is the nature and purpose of  
2 timber renewal in the area of the undertaking?

3 A. I would like to put a position  
4 statement on an overhead, Ms. Cronk. This is position  
5 statement No. 1 of the Industry, that renewal of the  
6 timber resource is an essential and necessary part of a  
7 sound timber management program.

8 Q. What is the basis, Mr. Waddell, for  
9 that perspective?

10 A. The Ministry defined renewal in their  
11 presentation or at least in the EA Document as  
12 consisting of two separate activities: First of all,  
13 site preparation; and, secondly, regeneration, and  
14 regeneration of course is broken down into natural and  
15 artificial, so you have those two components of  
16 renewal.

17 The Ministry witnesses, including Mr.  
18 Armson, testified before the Board that historically  
19 our forests have developed without much intervention  
20 from man, they have developed primarily as a result of  
21 natural occurrences or disturbances or events.

22 Modern timber management is meant to  
23 assist nature to produce forests that are more useful  
24 and of greater benefit and hopefully in a shorter  
25 timespan.

1                   It is the Industry position that the  
2                   fundamental objective of proper timber management in  
3                   the area of the undertaking is the achievement of a  
4                   predictable and continuous current and future supply of  
5                   quality raw material for Industry mills. This  
6                   objective cannot be accomplished without the  
7                   intervention in the forest by the forest manager.

8                   Ensuring the renewal of the timber  
9                   resource is essential to achievement of a reliable and  
10                  sufficient wood supply for the Industry mills. The  
11                  timber resource in the area of the undertaking is far  
12                  too important to have its future committed to chance.

13                  Q. One of the elements that you've  
14                  mentioned to the Board, Mr. Waddell, concerns the  
15                  integration of harvesting and renewal activities  
16                  through the mechanism of the FMA program.

17                  Mr. Gemmell, I understand that you will  
18                  be elaborating on that principle for the Board?

19                  MR. GEMMELL: A. That's correct. The  
20                  historical perspective regarding the division of  
21                  responsibility of harvest and renewal is set out in the  
22                  Ministry's Panel 2 evidence package, Exhibit 53.

23                  This panel quotes three reports which  
24                  speak to this division of responsibilities. They are  
25                  the Brody Report of 1967, the Armson Report of 1976,

1 part of Exhibit 53, and the Reid Report prepared for  
2 the Forest Management Institute 1978 which is Exhibit  
3 117.

4 The Brody report stressed the need to  
5 improve and integrate long-term efforts in  
6 regeneration, tending and protection and to develop  
7 coherent silvicultural practices.

8 The Armson Report concludes that  
9 separation of harvesting and renewal resulted in  
10 serious handicaps to effect regeneration in  
11 silvicultural. And also the harvesting decisions have  
12 direct and important implications on regeneration.

13 The Reid Report concluded that much can  
14 be done in the harvesting process to ease the problems  
15 of stand regeneration. For the benefit of the Board I  
16 would like to present Industry's position on an  
17 overhead once more.

18 "It is the Industry's position that an  
19 integrated relationship exists between  
20 harvesting, renewal and other timber  
21 management activities. Harvesting is a  
22 vital step in the renewal process and no  
23 one activity should be viewed in  
24 isolation."

25 Q. Could you outline for the Board, Mr.

1       Gemmell, what the basis for that position is  
2       specifically with respect to the concept of the  
3       integration of renewal and harvesting from the renewal  
4       perspective?

5                   A. Yes, I can, Ms. Cronk. The Industry  
6       agrees with the observation that by 1975 separation of  
7       regeneration and harvesting functions was having  
8       serious negative effects on any effort to achieve an  
9       integrated management planning process.

10                   As stated on page 34 of the Industry's  
11       statement of evidence on renewal, an integrated  
12       relationship exists between harvesting and renewal and  
13       other timber management activities and, again,  
14       harvesting is a vital step in the renewal process.

15                   There are some reasons for the Industry's  
16       position and these are, the planning and implementation  
17       of renewal operations are closely linked to harvesting,  
18       the choice and effectiveness of renewal operations are  
19       very much influenced by the harvesting method chosen  
20       and access for harvesting and renewal operations are  
21       also closely linked.

22                   There are a number of practical examples  
23       of the benefits of integration of harvest and renewal.  
24       One is the use of the same personnel in harvest and  
25       renewal activities and I think Mr. Squires has an



1 example of this.

2 MR. SQUIRES: Yes, I do.

3 Q. Could you turn your microphone on  
4 please, Mr. Squires.

5 MR. SQUIRES: I'm sorry, Mr. Gemmell you  
6 were referring to...?

7 MR. GEMMELL: The example of the  
8 personnel -- the relationship between personnel.

9 MR. SQUIRES: In the Spruce River Forest  
10 case study 4C I had an overhead of the organization  
11 chart of the Lakehead Woodlands as it relates to  
12 harvesting and renewal, and I showed a chart which  
13 showed the existing organization in 1989 and in that  
14 organization we had a general superintendent for  
15 forestry and purchasewood, we also had a general  
16 superintendent for harvesting or logging.

17 Beneath the general superintendent for  
18 forestry purchasewood, there was a divisional forester,  
19 a management forester and a foreman responsible for the  
20 free hold. Beneath the general logging superintendent  
21 there was a logging superintendent, a management  
22 forester -- I'm sorry, an operation forester  
23 responsible for the collection of management planning  
24 data that relates to harvesting portion of the  
25 operation and there was an additional operation foreman

1 responsible for road locations, et cetera.

2           The significant point that I made was  
3 that there was a cross referencing in communication  
4 between the people reporting to the two general  
5 superintendents and, in fact, during the renewal phase  
6 of the forest management activities some of the people  
7 beneath the two general superintendents changed  
8 reporting lines so that, as an example, the forester  
9 reporting to the general superintendent of forestry  
10 purchasewood through the divisional forester had  
11 responsibilities for planting in the field. During  
12 that period he reported directly to the general  
13 superintendent for logging. That's my example.

14           Q. Thank you, Mr. Squires.

15           Mr. Waddell, what is the situation in  
16 E.B. Eddy in term of assignment of personnel functions  
17 to renewal and harvesting?

18           MR. WADDELL: A. Yes. In our case study  
19 we also presented our specific example of how  
20 integration between renewal and harvesting had been  
21 achieved and very briefly it is achieved in three major  
22 ways.

23           First of all, at the upper level we have  
24 a -- in Espanola we have vice-president of forestry in  
25 wood products and reporting to him is a manager of

1 logging and a manager of forest resources so that you  
2 have the two sides of the equation, one responsible for  
3 the harvesting, one responsible for renewal. So  
4 integration is achieved at the senior level.

5 In the field, we have a district  
6 superintendent in charge of both of our districts and  
7 he is responsible for all activities that are carried  
8 out in each district. He has people reporting to him,  
9 supervisors, who are responsible for harvesting and who  
10 are responsible for the day-to-day forest renewal  
11 activities. So he, in essence, assumes complete  
12 responsibility for all aspects of our operations on the  
13 area assigned to him.

14 Our site preparation foreman, for  
15 example, as we indicated in our case study, normally in  
16 the winter months when they are not on site preparation  
17 go to work as either road location foreman or cut and  
18 skid foreman. So that not only do we maintain their  
19 expertise for the following year as site preparation  
20 foreman, but also they gain experience in harvesting  
21 and, thus, get a better idea of what the land and the  
22 site types are going to be like before they start their  
23 site preparation on it the following year.

24 Q. Thank you, Mr. Waddell.

25 Mr. Gemmell, apart from the assignment of

1 responsibility to personnel and the division of  
2 responsibility, are there any other practical examples  
3 that you can provide to the Board of the way this  
4 integration principle was implemented from a renewal  
5 perspective?

6 MR. GEMMELL: A. Yes, there are, Ms.  
7 Cronk. Another example in Abitibi-Price at Iroquois  
8 Falls - I think Mr. Hopkins gave testimony on this last  
9 week in the harvest panel - the fact that in the  
10 lowland black spruce sites the advanced growth through  
11 regeneration is very important for the next crop and  
12 that the harvesting and forwarding methods are designed  
13 to protect as much as this advanced growth as possible  
14 with the objective of producing the next crop of trees.

15 Another example of integration is the  
16 increased road building activities which have provided  
17 better access both for harvest and renewal.

18 Q. Well, if I could stop you there just  
19 on that one for a moment. Could I ask you to go to the  
20 package of interrogatories that has been marked as an  
21 exhibit this morning, and in particular to Forests for  
22 Tomorrow interrogatory No. 6.

23 Do you have a copy of that?

24 A. Yes, I do.

25 Q. Did that interrogatory relate, in



1 your view, to the issue that you have -- the matter you  
2 have just been discussing; that is, the use by the  
3 Industry of road construction methods and the actual  
4 building of roads related to renewal?

5 A. Yes, it does.

6 Q. Could you outline for the Board,  
7 please -- I should ask you first, Mr. Gemmell, is the  
8 answer to this interrogatory one prepared by you?

9 A. Yes, it was, by the access panel and  
10 myself.

11 Q. Thank you. Could you outline for the  
12 Board, please, the nature of the inquiry and then your  
13 evidence on it as reflected in this response?

14 A. Yes, I can. The interrogatory asks:

15 "How does Industry road construction  
16 differ on non-FMA lands as compared to  
17 roads on FMA lands with regard to  
18 harvesting and renewal activities?"

19 And our reply was threefold. One, the  
20 roads are built in the FMA to a higher standard and  
21 this is -- as illustration of the increase in what  
22 would have been tertiary roads originally would now  
23 be -- there would be more secondary roads  
24 construction -- constructed so that there would be  
25 increased access both for the harvest and renewal

1 activity. The roads are maintained for a long period  
2 of time because of the renewal activity and in general  
3 there are more roads being constructed on the FMA  
4 areas.

5 Q. All right. Thank you very much.  
6 Are there any other practical examples that you can  
7 offer to the Board as illustrations of how Industry  
8 implemented the integration concept under the FMA  
9 project?

10 A. Yes, I can. Another illustration is  
11 the choice of harvesting method which can facilitate  
12 subsequent renewal operations. In this case I could  
13 refer to Forests for Tomorrow question No. 4.

14 Q. That's interrogatory No. 4?

15 A. That's right.

16 Q. Is that for this panel?

17 A. That's for this panel, yes.

18 Q. And what was the nature of that  
19 inquiry and how does it relate to the use of harvest  
20 method to facilitate renewal operations?

21 A. This question asked:

22 "What, if any changes, in harvesting  
23 methods have influenced the choice and  
24 effectiveness of renewal prescriptions?"  
25 And as an illustration we have indicated

1 that in one case the fact that many of the areas are  
2 now full-tree logged and the full-tree logging results  
3 in less slash left on the site and, therefore, either  
4 light or no site preparation requirements on the upland  
5 planted areas.

6 A second illustration is the increasing  
7 use of high flotation equipment especially on the lower  
8 sites, and in many cases the high flotation, the wided  
9 tired skidders after they have forwarded the wood, the  
10 result is a compacted moss layer on many sites which  
11 actually improves the seedbed for the subsequent  
12 renewal.

13 A third example is the illustration which  
14 I have mentioned before, the fact that on many lowland  
15 sites mechanical harvesting can be conducted so that  
16 advanced growth remains after harvest which leads to  
17 the new crop.

18 And a fourth example is the better use of  
19 material in some areas where new markets are found and,  
20 therefore, more of the wood is taken off the area for  
21 subsequent renewal.

22 Q. Now, Mr. Gemmell, the Board knows  
23 from the evidence that you gave on Panel 4 and other  
24 panels that you practice forestry in the Clay Belt area  
25 an specifically the Iroquois Falls forest.

1                   With respect to the first example  
2                   referred to in this interrogatory response; that is,  
3                   the use of full-tree harvesting and the effect that it  
4                   can have of minimizing slash and the consequences for  
5                   site preparation, do you have any personal experience  
6                   with that yourself?

7                   A. Yes, I do. The example I have  
8                   given -- one example is in the case study on the final  
9                   harvest of block C, which I will refer to later, and in  
10                  general our operations at which I am quite involved  
11                  with our full-tree harvesting operations.

12                 Q. Apart from those examples, are there  
13                  any other that now occur to you which illustrate the  
14                  way in which Industry implemented the integration of  
15                  harvesting and renewal functions upon introduction of  
16                  the FMA program?

17                 A. The final example is in Mr. Murray's  
18                  area and that's in the selection and shelterwood  
19                  silvicultural system, intolerant hardwoods, harvesting  
20                  is the initial and essential component of regeneration.

21                 Q. Mr. Murray, do you agree or disagree  
22                  with that description of the relationship of harvesting  
23                  and renewal in the area of the undertaking with which  
24                  you are familiar?

25                 MR. MURRAY: A. Yes, I agree with that



1 statement.

2 Q. Thank you. Just dealing, Mr.  
3 Gemmell, if I could, returning for a moment to your own  
4 experience, have you had experience in the Clay Belt  
5 area prior to the introduction of the FMA program?

6 MR. GEMMELL: A. Yes. Prior to the  
7 introduction of the FMA I worked for the Ministry of  
8 Natural Resources in the Cochrane area.

9 Q. Did your role with the Ministry at  
10 that time require you to have any involvement with the  
11 same lands involved in the Iroquois Falls forest?

12 A. Yes, I was the management forester  
13 responsible for that area, the Iroquois Falls forest or  
14 what became the Iroquois Falls forest.

15 Q. Did your role with the Ministry have  
16 anything to do with renewal activities or was it  
17 focused on other activities?

18 A. A very important part of the job was  
19 renewal activities on that area.

20 Q. All right. And then after  
21 introduction of the FMA program, I take it at that  
22 point you joined Abitibi-Price in Iroquois Falls?

23 A. That's correct.

24 Q. And in your current capacity with  
25 Abitibi-Price, how do your renewal responsibilities in

1 general terms differ, if they do, from what you were  
2 doing when you were with the Ministry?

3 A. With Abitibi-Price I am the Assistant  
4 Logging Superintendent so my functions are in the  
5 operations side of the program which includes a renewal  
6 portion.

7 Q. All right. Are you in position then  
8 given the experience that you have, both before the FMA  
9 program and after introduction of the FMAs for Iroquois  
10 Falls forest, to offer the Board your own view as to  
11 the advantages or disadvantages of this integration of  
12 harvesting and renewal functions?

13 A. Yes, I think it's fairly obvious and  
14 the examples that we've given are quite illustrative of  
15 the fact that when you -- the same organization, both  
16 harvest and renews the forest, there is an  
17 inter-relationship of all the functions, all the job  
18 functions and it is a very successful process.

19 Q. In your view do timber managers in  
20 that situation gain from that duality of experience?

21 A. Absolutely, yes.

22 Q. Mr. Waddell, did you have any  
23 experience with planning and implementing renewal  
24 activities in the area of the undertaking prior to  
25 introduction of the FMA program?

1 MR. WADDELL: A. Yes, I did.

2 Q. I'm sorry, can you remind me, how  
3 long have you been involved in renewal activities in  
4 the course of your career as a professional forester?  
5 I'm sorry, I forget the actual number of years.

6 A. 30 odd years.

7 Q. Prior to the introduction of the FMA  
8 program, were you directly involved in renewal  
9 activities in any part of the area of the undertaking  
10 close to the lands which you now have responsibility?

11 A. Yes. From 1973 to 1980 I was with  
12 E.B. Eddy and that was prior to the FMA, of course, but  
13 I was involved with renewal in the sense that our  
14 company did have regeneration agreements with the  
15 Ministry of Natural Resources and I was involved with  
16 those. Prior to that, I was with the Ministry of  
17 Natural Resources for 14 years and my jobs with the  
18 Ministry of Natural Resources entailed direct  
19 involvement for forest renewal programs.

20 Q. What is your own view, based on your  
21 experience in the area of the undertaking, as to the  
22 advantages or disadvantages of the type of integration  
23 of harvesting and renewal functions that Mr. Gemmell  
24 has described?

25 A. There is no question in my mind that

1 the integration has achieved a lot of good things and  
2 it has got the Industry involved with its equipment and  
3 forestry expertise in carrying out renewal and I would  
4 hate to ever see it go back to the way it was before,  
5 these separated responsibilities.

6 Q. Thank you, Mr. Waddell.

7 Could I just turn then, Mr. Murray, for  
8 the moment to you, if I could. Specifically the Board  
9 has heard in evidence you have given previously as to  
10 the nature of your experience in the area of the  
11 undertaking and on Crown management units.

12 Could you indicate for the Board again  
13 what proportion of your career who have been involved  
14 in renewal activities on Crown management units or  
15 Crown licensed areas?

16 MS. MURPHY: A. About 30 years.

17 Q. Could you indicate for the Board, if  
18 you would, what the basis is in your view, based on  
19 your experience, for the Industry's interest in the  
20 renewal of the timber resource on Crown management  
21 units recognizing that Mr. Waddell has said that there  
22 is no direct involvement in planning or implementing  
23 those activities?

24 A. Yes, I will use an overhead to answer  
25 that.



1 Q. All right, thank you.

2 A. Madam Chair, Mr. Martel, this is the  
3 Industry's position statement No. 3 of the renewal  
4 witness. Timber renewal activities within both forest  
5 management agreement areas and Crown management units  
6 have a direct impact on short- and long-term wood  
7 supply for the Industry.

8 Q. Does that position statement reflect  
9 your experience, Mr. Murray? Do you agree with it?

10 I think it is the one on the top, Mr.  
11 Murray.

12 A. Thank you. Yes, it very definitely  
13 does.

14 Q. Why is that the case in your  
15 experience? Why is the Industry interested in the type  
16 of management on these units?

17 A. Yes. The Crown units comprise and  
18 the licences on Crown units comprise about 30 per cent  
19 of the licences in the area of the undertaking and the  
20 Crown management units are, as Mr. Waddell mentioned,  
21 the harvest and the renewal is managed by the Crown  
22 management unit forester.

23 Industry is concerned about renewal for a  
24 continuous -- as it is required. Renewal is required  
25 for a continuous and future wood supply for the

1 Industry and renewal activities have a direct impact on  
2 short- and long-term wood supply for the Industry.

3 Q. Why specifically are Crown management  
4 units of importance in that general area of concern to  
5 the Industry?

6 A. Well, the industry is vitally  
7 concerned about the Crown management units for a number  
8 of reasons. The Crown management units supply a  
9 significant source of wood supply to the mills of --  
10 Industry mills by both direct and by exchange; that is,  
11 many mills exchange wood from Crown units to get  
12 different species. They would exchange pulpwood for  
13 sawlogs type.

14 Crown management units supply wood to  
15 many FMA mills, again, and non-FMA mills both through  
16 exchange and by purchase. Crown management units are  
17 often located close to the mills because of the fact  
18 that Crown management units are generally in a closer  
19 area to the mill area and can supply wood through  
20 roundwood and chips to the mills at a very attractive  
21 price being of shorter distance.

22 Those are the major reasons for the  
23 Industry's intense interest in the Crown management  
24 units wood supply.

25 Q. Is there any wood generated from

1 Crown management units that does not in some way become  
2 directed to the Industry?

3 A. I would say no.

4 Q. What is the significance of wood  
5 supply from Crown management units in the Great  
6 Lakes/St. Lawrence forest region which you are  
7 familiar?

8 A. The Great Lakes/St. Lawrence forest  
9 region is primarily an area of crown management units  
10 and the many mills in the Great Lakes/St. Lawrence  
11 unit -- excuse me, forest region are totally dependent  
12 on the wood from Crown management units for their  
13 supply.

14 Q. Mr. Waddell, are you familiar with  
15 the draft terms and conditions that have been proposed  
16 by the Ministry of Natural Resources to date in this  
17 hearing?

18 MR. WADDELL: A. Yes, I am.

19 Q. Are you familiar specifically with  
20 those that pertain to Crown management units?

21 A. Yes, I am.

22 Q. Can you tell me, first, do you agree  
23 or disagree with the suggestions made by Mr. Murray as  
24 to the relative importance of Crown management units in  
25 providing wood supply to the Industry?

1                   A. Yes, I certainly agree the Crown  
2 management units are absolutely essential to supply  
3 both current and future wood supply for the Industry  
4 mills.

5                   Q. Does the Industry take a position  
6 with respect to the terms and conditions proposed by  
7 the Ministry of Natural Resources relating to Crown  
8 management units specifically?

9                   A. Yes. There are three proposed terms  
10 and conditions that I would like to refer to and I  
11 would ask the Board to refer to Exhibit 700, please,  
12 which is the Ministry's proposed terms and conditions  
13 filed with the Board.

14                   I would ask you to turn to conditions 10,  
15 11 and 12 if you would. Conditions 10 and 11 speak in  
16 general to how silvicultural ground rules will be  
17 developed and what they shall include.

18                   Condition 12 states that each timber  
19 management plan shall contain a forecast of renewal  
20 activities to be carried out during the five-year term  
21 of the TMP.

22                   Industry supports the Ministry's proposed  
23 conditions 10 and 12 based on this understanding:  
24 First, that the terms and conditions must apply equally  
25 to all management units regardless of what type they



1 are; and, secondly, that Crown management units must be  
2 managed to the same standards as are FMAs.

3 Third, that assured government commitment  
4 towards silvicultural effort is necessary without  
5 distinction between management unit types and this  
6 assured government commitment is necessary if an  
7 adequate and successful renewal program is to be  
8 assured, and we will deal further with this in later  
9 evidence. So that we do support condition 10 and 12.

10 The Ministry's proposed condition No. 11  
11 requires that the silvicultural ground rules contain a  
12 description by site type of first the silvicultural  
13 and -- the silvicultural system and the logging method  
14 to be used; and, secondly, that it contain the optional  
15 renewal treatments including the preferred methods of  
16 site preparation and regeneration.

17 Industry is concerned that this proposed  
18 condition as written is so open ended that it could be  
19 interpreted or applied in a manner that would severely  
20 restrict our flexibility, our flexibility to make  
21 decisions and for each forest manager, regardless of  
22 whether he be on an FMA or CMU, we are concerned that  
23 it would restrict his decision-making authority.

24 It is the Industry's position that  
25 decision-making flexibility must be maintained and that

1       alternate renewal methods and equipment choices must be  
2       available to allow managers, be they CMU managers, be  
3       they FMA managers, they must be allowed to have that  
4       flexibility of decision-making to give them the ability  
5       to respond to changing conditions and market  
6       conditions.

7                       Therefore, the Industry cannot support  
8       the Ministry's proposed condition No. 11 in its  
9       proposed form, and this again will be discussed further  
10      in our evidence.

11                      Q.   One of the witnesses, Mr. Waddell,  
12      who testified before the Board on behalf of the  
13      Ministry of Natural Resources was Mr. Ronald Waito.

14                      It was in part his evidence before the  
15      Board that looking at renewal activities from a  
16      planning point of view that appropriate planning would  
17      not distinguish between unit type in determining what  
18      appropriate stand condition criteria were to be used to  
19      measure results on a particular management unit.

20                      Are you familiar in general terms with  
21      the evidence that Mr. Waito gave on that issue. I have  
22      tried to summarize it, but are you familiar in general  
23      terms with what his evidence was?

24                      A.   In general, yes.

25                      Q.   All right. Do you agree or disagree

1 with that proposition, that from a planning point of  
2 view there should not be any distinction between  
3 management unit in settling on appropriate standards or  
4 criteria for measuring performance?

5 A. Completely concur.

6 Q. Why in essence is that, from your  
7 point of view?

8 A. Well again, as we have tried to  
9 express our concern that the CMUs be managed at the  
10 same level as the FMAs, and until very recently they  
11 did not have the same management standards as FMAs did,  
12 however, with the new TMP in place I believe this has  
13 changed and because the CMUs are so important to our  
14 future wood supply, we feel that they must be managed  
15 across the Board with the same standards as the FMA.

16 Q. All right. I would like to turn now,  
17 gentlemen, to the entire issue of renewal from the  
18 Industry's perspective, and what I mean by that is what  
19 is actually involved in it based on the Industry's role  
20 and what the Industry actually does.

21 And, Mr. Ferguson, perhaps I could start  
22 with you. Could I ask you in general terms, what is  
23 involved from the Industry's perspective in the process  
24 of renewal generally?

25 MR. FERGUSON: A. Yes. Madam Chair, Mr.

1 Martel, from the Industry's perspective there are  
2 basically three processes involved in timber renewal  
3 from the Industry's perspective and I would like to  
4 place an overhead which will illustrate the three  
5 processes of which I am speaking.

6 The three processes which are outlined on  
7 the overhead, which is Figure 2 from page 49 of the  
8 Panel 8 statement of evidence, indicate the three major  
9 categories of planning, implementation and monitoring.

10 I will be speaking to the section  
11 concerning planning as it currently exists and my  
12 colleagues on the panel will be discussing the  
13 implementation and monitoring as we proceed.

14 Q. Well then, dealing just with the  
15 planning aspect of it and I would -- the planning  
16 component of this process as described in Figure 2 -  
17 and I would ask you to bear in mind that Panel No. 10  
18 to be called on behalf of the Industry will be dealing  
19 in some detail with planning evidence - but could you  
20 in general terms outline for the Board, particularly  
21 from a renewal perspective, what is involved in that  
22 component of the process from the Industry's point of  
23 view?

24 A. Yes, certainly. I am aware that the  
25 Board has already heard considerable evidence



1 concerning planning requirements from various MNR  
2 witnesses and, as Ms. Cronk has indicated, the planning  
3 panel, that being Panel 10, will discuss the planning  
4 process in some detail as it presently exists, as well  
5 as proposing some improvements to the process.

6 It's not my intention to discuss the  
7 planning process in any great detail, but rather to  
8 highlight a few aspects of this process as it relates  
9 specifically to renewal.

10 As is the case with other aspects of  
11 forest management such as harvest or access, planning  
12 does require -- or renewal does require advance  
13 planning, the alternatives must be considered and  
14 evaluated to ensure that the appropriate renewal  
15 activity is planned and conducted.

16 Under the current timber management  
17 planning process there are a number of requirements  
18 associated with renewal activities, but basically the  
19 renewal planning follows pretty much the same planning  
20 process as other timber management activities such as  
21 access or harvest.

22 There are the same opportunities for  
23 public involvement, those being at the stages of the  
24 invitation to participate, the information centre,  
25 there is an opportunity to review the draft plan as it

1 relates to renewal, and there is also the opportunity  
2 to inspect the final approved plan.

3 Renewal activities may also be addressed  
4 in area of concern prescriptions and the forecast of  
5 renewal activity is required as part of the timber  
6 management plan.

7 A forecast of seed and planting stock  
8 requirements is provided to the MNR. It is necessary  
9 to identify species, stock type, seed zone and total  
10 numbers. These must all be considered in order that  
11 appropriate species and type be available and at the  
12 appropriate time. One of the major renewal  
13 considerations associated with the timber management  
14 plan is the update of the silvicultural ground rules.  
15 This updating is done every five years and is done  
16 using the best information that is available at the  
17 time.

18 The silvicultural ground rules identify  
19 the management practices and, in particular, the  
20 renewal options for each individual forest and are  
21 based on such factors as soil type, soil depth, cover  
22 type, site conditions and the timber manager's  
23 knowledge of the area, as well as availability of  
24 equipment and finances.

25 The silvicultural ground rules are

1 developed jointly by the FMA holder and the MNR during  
2 the timber management planning process and generally  
3 provide options for most sites.

4 From the Industry's perspective the  
5 ground rules are extremely important as the  
6 prescriptions within the ground rules from a  
7 consideration of local site conditions, markets and  
8 particularly the history and effectiveness of past  
9 treatments.

10 One aspect of renewal planning with  
11 respect to the whole timber management planning process  
12 is that for any five-year period harvest and renewal  
13 activities will not occur on precisely the same land  
14 base. This is because there is a time lag. Although  
15 relatively short, there is a time lag between harvest  
16 and renewal activities.

17 Q. I am sorry. Mr. Ferguson, if I could  
18 just stop you there for a moment. What do you mean  
19 when you say that renewal activities and harvest  
20 activities are not always on the same land base in the  
21 same area, the same unit. Why is that the case?

22 A. Well, the land available for renewal  
23 during the period of the timber management plan  
24 consists of area requiring treatment at the start of a  
25 plan period as well as the area becoming available

1 during the plan period. This may include areas of  
2 untreated land from a previous planning period, it may  
3 also include NSR lands from an even earlier period  
4 possibly five to ten years earlier. Similarly,  
5 portions of forest harvested during a particular  
6 planning period may not receive renewal treatment until  
7 the subsequent period.

8 So there is a slight time lag which  
9 affects the land base relative to harvest and renewal  
10 and, for this reason, renewal sections of the timber  
11 management plan may appear somewhat distorted relative  
12 to the harvest allocations, and this may be evident in  
13 such things as the report on past operations and may  
14 also be evident in the forecast of renewal.

15 Q. Well, all of those comments, Mr.  
16 Ferguson, relate to the timber management plan box on  
17 Figure 2. How does the annual work schedule figure  
18 into the planning and implementation of renewal  
19 activities?

20 A. Okay.

21 Q. I suppose just the planning at this  
22 stage.

23 A. Right. In addition to the timber  
24 management plan, the annual work schedule details  
25 renewal operations on an annual basis. The renewal



1 work which is detailed within an annual work schedule  
2 must fall within the cover of the timber management  
3 plan and be consistent with the silvicultural ground  
4 rules.

5 Renewal prescriptions to be applied are  
6 determined through ground inspections conducted both  
7 before and after harvest and, to some extent, during  
8 harvest I suppose as well. Prescriptions may be  
9 modified after harvest as more information about a  
10 particular site becomes available.

11 By way of an example of this, a site may  
12 be scheduled for planting during a pre-cut inspection,  
13 however, following harvest it may become evident that  
14 this particular site may be suited to direct seeding  
15 and the prescription may be altered. I would stress  
16 however that any changes of this nature must still be  
17 consistent with the approved ground rules.

18 It is Industry's position that  
19 flexibility must always be built into renewal plans.  
20 Much of the planning is done prior to the harvest and a  
21 much clearer picture of the site may be available  
22 following harvest and a more appropriate renewal  
23 activity may be selected.

24 One must also bear in mind that renewal  
25 follows harvest and consequently any changes in

1 harvesting schedules will have a direct impact on  
2 renewal operations.

3 Q. Then dealing with the last component  
4 that is identified on Figure 2, what is called  
5 individual project planning, what do you mean by that  
6 and how does it relate to renewal activities?

7 A. Yes. This would be the final phase  
8 of planning. This is done on an individual project  
9 basis and normally done at a camp or a district level  
10 within Industry to co-ordinate the project with other  
11 ongoing camp activities. In many cases this is a  
12 representation of integration of harvest and renewal  
13 operations.

14 Q. Can you help me as to what  
15 specifically you have in mind? What would be an  
16 example of an individual project being planned at that  
17 level?

18 A. I think some of the examples that Mr.  
19 Gemmell had indicated, the actual scheduling of  
20 operations within the camp as such, the timing of a  
21 particular operation with respect to another, which  
22 areas may receive site preparation first, the assigning  
23 of manpower to actually conduct the operations and such  
24 as this.

25 Q. I see. Are the steps in the planning

1 process and the nature of the planning activities that  
2 you have described as set out on Figure 2 consistent as  
3 they relate to renewal activities with the process  
4 being proposed by the OFIA/OLMA to the Board?

5 A. No, not entirely. What I have  
6 indicated is the present process under which we work.  
7 As we mentioned earlier, there will be further  
8 discussion of the entire planning process in the  
9 Industry Panel 10 and we will be proposing at that time  
10 some changes to the current process.

11 Q. Thank you. Are you dealing as well,  
12 Mr. Ferguson, with the second component,  
13 implementation?

14 A. In part. That will be dealt with as  
15 a panel.

16 Q. All right. Is it yourself or is it  
17 another member of the panel who is dealing with the  
18 implementation section?

19 A. Another.

20 Q. All right. And I understand, Mr.  
21 Squires, that you are covering part of it; is that  
22 correct?

23 MR. SQUIRES: A. Yes, I am, Ms. Cronk.

24 Q. Well then, dealing just then with  
25 that entire component on Figure 2, implementation

1 generally, could you outline for the Board, please,  
2 what generally the Industry's position is with respect  
3 to the implementation of renewal activities?

4 A. Yes, yes, I can. I have a position  
5 statement which I would like to put on top of the  
6 overhead.

7 The position statement is that the choice  
8 of silvicultural systems and renewal methods to be used  
9 in a management unit is an evolutionary process that  
10 takes into consideration the silvical characteristics  
11 of the species present in the units, the terrain, site  
12 and stand conditions of the units, the wood supply  
13 factors present in the unit, and the available  
14 resources.

15 Madam Chair, my portion of this  
16 presentation relates to the renewal part of  
17 implementation and I will be speaking specifically to  
18 the regeneration which is down in this box here.

19 Q. You are pointing to the third box  
20 under implementation?

21 A. I am pointing to the third box under  
22 implementation.

23 Q. Yes, thank you.

24 Mr. Squires, the Board has heard a great  
25 deal of evidence from Ministry of Natural Resources



1 witnesses about what is involved generally in he  
2 renewal activities and specifically with respect to  
3 regeneration, but could you outline for the Board from  
4 the Industry's perspective what the options are that  
5 are actually engaged in from time to time by the  
6 Industry?

7 A. Yes, and for this I have another  
8 overhead.

9 Yes. Under implementation renewal we  
10 have the two sections referred to earlier in Figure 2,  
11 we have the site preparation and regeneration. I  
12 pointed out that I will be talking specifically to  
13 regeneration.

14 What I will here point out under site  
15 preparation the various methods that can be utilized  
16 under site preparation. You have five possibilities,  
17 there's mechanical, chemical, prescribed burn and all  
18 of those three combined, and then there is the option  
19 of no site preparation.

20 I would point out that prescribed burn,  
21 when it is an option and is chosen, it is carried out  
22 by the Ministry of Natural Resources; the Industry does  
23 not carry out prescribed burning.

24 Under regeneration, the options available  
25 to us are those of planting, direct seeding, natural

1 regeneration and again we have the possibility of  
2 combined measures.

3 Q. Does the Industry engage, Mr.  
4 Squires, in each of those forms of renewal activity  
5 across the area of the undertaking apart from what you  
6 said about prescribed burns?

7 A. Yes, it does.

8 Q. What generally from an Industry  
9 timber manager's perspective are the factors that are  
10 taken into account in choosing a particular renewal  
11 alternative?

12 A. The factors -- clearly there is a  
13 wide range of options available to us in the various  
14 treatments, but in practice the options are restricted  
15 by terrain, by site, stand conditions and the silvics  
16 of the desired and existing tree species. These  
17 together determine the probability for success and ease  
18 of application of a particular prescription.

19 Within the FMAs the ground rules are  
20 formatted with reference to MNR silvicultural guides  
21 and these have a number of factors, and those factors  
22 that are available to us or that influence the choice  
23 and timing of implementation of a silvicultural  
24 prescription are numerous and I will present a list,  
25 which is not necessarily all inclusive. Each of those

1 would be key on different sites at different times.

2 The list I have is: wood supply, supply  
3 to the pulp mills that is, the site characteristics,  
4 those characteristics of soil and texture, nutrients,  
5 the organic matter thickness, the moisture regime of  
6 the soil, the drainage, the slope and aspect...  
7 topography.

8 ---Discussion off the record

9 MS. CRONK: Q. Sorry, the reporter  
10 didn't hear you, Mr. Squires. The slope and aspect,  
11 and then what did you say?

12 MR. SQUIRES: A. The slope and the  
13 aspect of the location considered for treatment, the  
14 topography, the soil depth, the stoniness of the  
15 terrain -- or stoniness and terrain, I should say.

16 Additional factors of accessibility; that  
17 is, I mean here, the availability of access and the  
18 type of access that may be available and in reference  
19 to that the distance from the local mills.

20 The availability of equipment is  
21 important and relative to the season that that  
22 equipment may be required, the minimum of the location  
23 for servicing is desirable for that equipment, and the  
24 type of equipment itself.

25 Another factor is cost effectiveness of

1 treatments and the availability of funds as the cost  
2 relative to risk and the allocation of the money.

3 Additional factors, the availability of  
4 seed and planting stock, also the availability of  
5 trained human resources, and the silvicultural system  
6 and harvesting methods that are being employed.

7 If natural regeneration is the option,  
8 modified systems of clearcutting or harvesting to  
9 preserve advanced growth may be employed. Harvest can  
10 influence the type and intensity of further site  
11 preparation methods, and an example there, prescribed  
12 burns are most effective when tree-length harvesting  
13 has been used in that the slash remains on the site.  
14 For full-tree logging they permit less intensive site  
15 preparation, or in fact if they delineate, the  
16 mechanical site preparation, in some cases for black  
17 spruce, is the required regeneration.

18 I would list also the season of operation  
19 the lowland winter harvesting and shear blading or  
20 mechanical site preparation of upland jack pine  
21 cut-overs in early summer are examples. In the latter  
22 we would take advantage of following hot weather which  
23 would open cones and release seed.

24 ---Discussion off the record.

25 MS. CRONK: Q. You had indicated that



1       you regarded the season of operation as being a  
2       relevant factor in the choice of renewal options as  
3       well. Why is that?

4                   MR. SQUIRES: A. The season of operation  
5       is important. In lowland winter harvesting and shear  
6       blading or mechanical site preparation of upland jack  
7       pine cut-overs in early spring, these can take  
8       advantage of the various conditions prevailing relative  
9       to the jack pine, for instance, on the upland sites.  
10      It's important to get the hot weather period to open  
11      the cones and release seed --

12      ---Discussion off the record

13                   MS. CRONK: Q. Sorry, Mr. Squires, we're  
14      just having a little trouble. If you could perhaps  
15      just go a little slower and repeat what you were saying  
16      about relative to jack pine, this having some  
17      particular importance?

18                   MR. SQUIRES: A. Relative to jack pine,  
19      mechanical site preparation on the upland jack pine  
20      sites is better done in the early summer to take  
21      advantage of the coming hotter weather which will open  
22      the cones and release seed. Again that is an example  
23      of the season of operation.

24                   Another factor that we would take into  
25      consideration are wildlife and other resource values.

1       These may restrict the use of certain types of  
2       machinery or renewal methods in different  
3       circumstances.

4               An additional factor is the presence of  
5       competing vegetation. Industry Panel 7, which you  
6       would ordinarily have heard but due to circumstances  
7       will not be hearing until later, will be discussing  
8       this in detail.

9               Presence of competing vegetation includes  
10      the options available there under the competing  
11      vegetation to grows about fertile sites where they  
12      develop a wide range of competing species. The site  
13      preparation and the tree species, stock types and  
14      grades must be very carefully selected on those sites  
15      that will have very severe competition. And chemical  
16      tending measures may be necessary either as a site prep  
17      or as a tending.

18              Age of cut-over and the potential for  
19      suppression, this also -- or will also be discussed by  
20      Panel 7 in its statement of evidence on tending and  
21      protection of the timber resource.

22              As I stated, that is not necessarily an  
23      exhaustive list, Madam Chair, but all additional  
24      factors are as well components in the selection of a  
25      silvicultural prescription.

1 Q. Did you list those factors in any  
2 particular order of priority?

3 A. No, I did not.

4 Q. You have indicated that you will be  
5 dealing with the regeneration side of Figure 3; is that  
6 correct?

7 A. That is correct.

8 Q. All right. Perhaps we could start  
9 with site preparation and I understand, Mr. Nicks, you  
10 will be dealing with it?

11 MR. NICKS: A. Yes, I will.

12 Q. Could you outline for the Board  
13 please again, from the perspective of the Industry the  
14 extent of site presentation activities in which the  
15 Industry is involved in the area of the undertaking.  
16 Let's talk about how much first?

17 A. Okay. I would like to start with a  
18 concise definition of site preparation as viewed by  
19 renewal panel members and the OFIA/OLMA.

20 Generally site preparation is defined  
21 concisely as the disposal or alignment of slash and the  
22 treatment of the forest floor and competing vegetation  
23 to favour commercially desirable tree species.

24 I have a couple of slides that I would  
25 like to present which will serve to illustrate the

1 extent of the site preparation programs since the  
2 inception of the FMAs.

3 The slide on the screen is a slide of  
4 Figure 4 on page 63 of our renewal statement of  
5 evidence. It is an excerpt from the FMA task force  
6 report which has been entered previously as Exhibit No.  
7 940.

8 What this graph illustrates is the  
9 expansion of site preparation on Crown lands in the  
10 area of the undertaking since the inception of the FMA  
11 program on the -- of course on the horizontal or "x"  
12 axis are the years and on the vertical axis is the area  
13 site prepared in thousands of hectares.

14 The area in orange is the other Crown  
15 management unit areas and of course the FMA areas are  
16 in yellow, and what this slide illustrates is the very  
17 rapid expansion of site preparation on Crown lands  
18 since the inception of the FMAs from a level of about  
19 55 -- it is about 50,000 hectare, excuse me, in 1981 to  
20 about 110,000 hectares in 1987.

21 The second slide presents the results of  
22 four five-year FMA reviews and contrast the levels of  
23 site preparation on the levels occupied by the FMAs  
24 after signing the FMAs to the areas site prepared on  
25 the same land base in the five years prior to the FMAs.



1 Q. Could I stop you there just for a  
2 moment, Mr. Nicks.

3 MS. CRONK: For the assistance of my  
4 friends, Madam Chair, this slide has been photocopied  
5 and is part of Exhibit 1142.

6 And just dealing with these slides for  
7 the benefit of the Board, I would like to file with the  
8 Board two original copies of this slide and one other  
9 related to it. The first site preparation slide will  
10 be referred to by Mr. Nicks, the second I understand  
11 will be referred to by Mr. Squires.

12 MADAM CHAIR: Excuse me, Ms. Cronk, do  
13 you want those two to have the same exhibit number?

14 MS. CRONK: I would suggest that they  
15 should.

16 Q. Dealing with this slide, Mr. Nicks,  
17 it refers to the source of the information. Perhaps  
18 you could outline that first for the Board, if you  
19 would, please?

20 MR. NICKS: A. Yes. The source of the  
21 information for this slide are the published figures in  
22 the four five-year reviews which have been undertaken  
23 by the MNR to date on the first 17 FMAs and the  
24 information that's presented on a slide is broken down  
25 basically by the signing date.

1                   On the left-hand side of the slide you  
2                   see two columns, one in light blue and one in a purple  
3                   colour, which refer to the first five-year review of  
4                   the first five FMAs covering the period 1980 to 1985  
5                   and this is Exhibit No. 68 before the Board.

6                   Comparing the two bars, the blue against  
7                   the purple, one can notice a 30 per cent increase in the  
8                   total area site prepared by the companies and the MNR  
9                   combined in comparison with the five-year total  
10                  achieved by the MNR in the pre-FMA period from 1975 to  
11                  1989. So a 30 per cent increase occurred in the  
12                  five-year time period prior to the signing of those  
13                  first five FMAs.

14                  The second group are a pair of bars and  
15                  the slide refers to the second five-year review, which  
16                  is Exhibit No. 31 before the Board, on the next three  
17                  FMAs operative from 1981 to 1986 and the data  
18                  illustrates a 139 per cent increase in the total area  
19                  site prepared versus that area treated by the MNR alone  
20                  in the preceding five years.

21                  The third pair of bars from the left  
22                  refers to the third-five year review, Exhibit No. 69  
23                  before the Board, which cover the activities on a  
24                  further five FMAs between 1982 and 1987 and the data  
25                  illustrates a 194 per cent increase in site prepared

1 area over that area treated in the preceding five years  
2 and, finally, the fourth pair of bars refer to the  
3 fourth five-year review.

4 Q. If I could stop you there for a  
5 moment, Mr. Nicks.

6 MS. CRONK: It is my understanding, Madam  
7 Chair, that that fourth review, FMA review has not yet  
8 been filed as an exhibit with the Board. It has  
9 recently become publicly available and Mr. Shibitani  
10 has gone upstairs to our office to obtain copies and I  
11 will tender that as the next exhibit when he returns.

12 Thank you, Mr. Nicks.

13 MR. NICKS: Okay. Referring again to the  
14 right-hand side of this particular slide, the data  
15 refers to the fourth five-year review of a further four  
16 FMAs operative between 1983 and 1988 and the results of  
17 this review indicated a 170 per cent increase in site  
18 prepared area on the same land base after the signing  
19 of the FMA as compared to prior to the FMA.

20 So all of these reviews indicate a very  
21 substantial increase in site preparation activity.  
22 These increases were a direct result of the commitment  
23 made by Industry to maintain forest productivity under  
24 the FMAs and the commitment made by the Ontario  
25 government to fund the required treatments.

1 MS. CRONK: If I could ask you to stop  
2 just for a moment, Mr. Nicks.

3 I have provided Mr. Nicks with a  
4 document entitled Forest Management Agreements, Fourth  
5 Five-Year Review 1983/1988 under the insignia or logo  
6 of the Ministry of Natural Resources, the Minister Lynn  
7 McLoud.

8 Q. Is that the fourth fifth-year review  
9 to which you referred?

10 MR. NICKS: A. Yes, it is.

11 MS. CRONK: Madam Chair, if that could be  
12 the next exhibit, please.

13 MADAM CHAIR: Yes, that's Exhibit 1144.

14 ---EXHIBIT NO. 1144: Document entitled Forest  
15 Management Agreements, Fourth  
Five-Year Review 1983/1988.

16 MADAM CHAIR: Ms. Cronk, is this a  
17 convenient time to break?

18 MS. CRONK: Yes.

19 MADAM CHAIR: We will take a 20-minute  
20 break now.

21 MS. CRONK: Thank you.

22 ---Recess taken at 9:40 p.m.

23 ---On resuming at 10:00 a.m.

24 MADAM CHAIR: Please be seated.

25 Ms. Cronk, we will break for lunch at 12



1 o'clock and then we will sit until 3 o'clock. If you  
2 feel you want to have a short break this afternoon you  
3 can let the Board know.

4 MS. CRONK: Thank you. When will we  
5 resume from the lunch break?

6 MADAM CHAIR: Twelve to one.

7 MS. CRONK: Thank you.

8 Q. Mr. Nicks, before the break you were  
9 outlining for the Board the information available  
10 regarding the extent of the Industry's involvement  
11 under the FMA program and site preparation activities  
12 in the area of the undertaking.

13 Could you again from the perspective of  
14 the Industry elaborate on the types of site preparation  
15 options that are actually engaged in by the Industry in  
16 the area of the undertaking?

17 MR. NICKS: A. Yes, I will. I would  
18 first like to place an overhead before the Board. This  
19 is an overhead of Figure 3 from page 55 of our  
20 statement of evidence. I would like to leave this on  
21 for a while by way of illustration of the main points I  
22 am going to discuss.

23 The options that can be seen on the  
24 left-hand side of this flow chart or decision or  
25 selection chart refer to site preparation and there are

1 basically five options under the heading Site  
2 Preparation. They are mechanical site prep, chemical  
3 site prep, prescribed burning, combined measures which  
4 refer to various combinations of the preceding three  
5 and no site preparation is also considered an option in  
6 some cases.

7 I will go through these options in turn  
8 starting with mechanical site preparation. Mechanical  
9 sites preparation, Madam Chair, is undertaken for the  
10 following reasons: to create suitable microsites for  
11 planting or seeding, to reduce or prevent competition  
12 from undesirable vegetation, to improve the space  
13 between planted or seeded trees and to increase planted  
14 productivity through improved access.

15 The method and timing of mechanical site  
16 preparation must vary according to species silvics and  
17 site, stand and terrain conditions, and by way of  
18 illustration I would like to refer to an example.

19 The regeneration of black spruce in the  
20 Clay Belt often requires mechanical site preparation  
21 through shear blading. This must be done in the winter  
22 months when the ground is frozen so that heavy  
23 bulldozers can be supported by the organic soils,  
24 whereas, in complete contrast, the regeneration of jack  
25 pine on upland mineral soil sites must be done in the

1 summer months when the ground is thawed and equipment  
2 such as distrenchers can remove the humus layer to  
3 expose the mineral soil required for the germination of  
4 seed or the planting of container stock, for example.

5 So we have two mechanical site  
6 preparation systems which are in complete contrast in  
7 their timing as a result of the silvics of the species  
8 and the site.

9 The advantages of mechanical site  
10 preparation from the Industry's viewpoint are fourfold.  
11 They include, as the first point, the removal of slash,  
12 residual vegetation and heavy duff from the planting or  
13 seeding microsite.

14 The second advantage is the elevation of  
15 the planting or seeding site in wet and/or cold soils.

16 The third advantage of mechanical site  
17 preparation is increased planter accessibility, and the  
18 fourth and final major advantage of mechanical site  
19 preparation is improved tree growth through loosening  
20 \*\*ination of fine textured soils.

21 There are, however, a couple of potential  
22 disadvantages to mechanical site preparation if not  
23 applied in a judicious manner. The first of which is  
24 the compaction of heavy equipment on fine textured  
25 soils such as silk loams and clays by equipment which

1 is too heavy for the site, and a second potential - and  
2 I stress potential - disadvantage would be reduced  
3 productivity through humus removal on coarse textured  
4 soils such as coarse sands.

5 However, these are only potential  
6 disadvantages and the wise forest manager will guard  
7 against them by selecting the appropriate equipment for  
8 the site.

9 So in summary, the appropriate mechanical  
10 site preparation is advantageous on most sites and it's  
11 absolutely essential on many.

12 The second broad site preparation  
13 category or technique is that of chemical site  
14 preparation. Chemical site preparation very generally  
15 is undertaken to remove or to prevent the emergence of  
16 vegetation which may suppress the growth of desired  
17 tree species. Chemical site prep is usually employed  
18 prior to mechanical or prescribed burn site preparation  
19 on richer sites with potential brush, grass or hardwood  
20 competition.

21 The Board will have or may in future hear  
22 more details in Panel 7, so I will confine my remarks  
23 to the foregoing.

24 MS. CRONK: If I could stop you there,  
25 Mr. Nicks.



1 I can confirm for the benefit of the  
2 Board that the Industry's Panel 7 witnesses when they  
3 return before you will be discussing generally the use  
4 of herbicides in both the chemical site preparation and  
5 tending context.

6 MR. NICKS: Thank you, Ms. Cronk.

7 The third category of site preparation  
8 generally is prescribed burning, as we can see in the  
9 third box below the title of Site Preparation on the  
10 overhead. Prescribed burning is a useful technique in  
11 site preparation. It's useful in three major ways.

12 The first is in disposing of obstructive  
13 logging slash to facilitate either direct planting or  
14 subsequent mechanical site preparation.

15 The second major advantage of prescribed  
16 burning is in part removing the duff to facilitate  
17 planting or seeding so that the roots can be placed in  
18 mineral soil or that -- so the soils can germinate on  
19 the mineral soil substrate which it prefers, especially  
20 in the case of jack pine.

21 And a third potential benefit of  
22 prescribed burning, depending on timing in a large  
23 measure, is in controlling competing vegetation such as  
24 white birch, aspen.

25 Prescribed burns on FMAs are requested by

1 Industry and are planned and conducted by the OMNR with  
2 assistance from the Industry in some cases; for  
3 example, in the training of our fire suppression crews  
4 it has been useful in the past to participate on  
5 prescribed burns to give our woodworkers, who serve as  
6 emergency fire suppression people, some firsthand  
7 experience in fire control, so in some cases we have  
8 assisted.

9 MADAM CHAIR: Mr. Nicks, excuse me. We  
10 have heard evidence previously from the Ministry of  
11 Natural Resources concerning the very detailed  
12 operations that are carried out with respect to  
13 prescribed burning and is it the experience of Industry  
14 that you receive the amount of prescribed burning that  
15 you request from the Ministry of Natural Resources, or  
16 that in fact you request much more prescribed burning  
17 than they are able to deliver because of personnel and  
18 resources?

19 MR. NICKS: Well, the experience of our  
20 company is certainly the latter that -- particularly in  
21 the last few years with very dry summers, the manpower  
22 and equipment resources of the MNR have stretched the  
23 limit strictly fighting wild fires and that prescribed  
24 burns of necessity have been second priority, so much  
25 of the area has not been burned that the Industry has

1 requested, certainly in our company's case.

2 MADAM CHAIR: Thank you.

3 MR. NICKS: And that leads to me to my  
4 next points which is really that the applicability of  
5 prescribed burning is highly dependent on three major  
6 factors.

7 The first of which is site features and  
8 those site features generally consist of terrain and  
9 the presence of natural boundaries, and by terrain I  
10 mean slope configuration, that the optimal  
11 configuration for prescribed burning is a gentle up  
12 slope towards the centre of the fire. Since fire tends  
13 to spread up hill it allows good control and the other  
14 site feature would be the presence of natural  
15 boundaries and by that I mean of course lakes, rivers  
16 and roads which may have been constructed. The Board I  
17 am sure has heard detailed evidence from MNR on this  
18 subject.

19 The second factor that the Industry sees  
20 as effecting the applicability of prescribed burning is  
21 of course weather conditions. One must have weather  
22 conditions which are not too wet and certainly not too  
23 dry in order to have sufficient burning days for the  
24 objectives to be met. As I have mentioned, just  
25 recently those burning days simply have not

1 materialized because of extreme fire hazard elsewhere  
2 in the province in recent years.

3 And the third factor influencing the  
4 applicability of prescribed burning, which is really  
5 related to the second one, is the availability of  
6 training crews with specialized equipment, particularly  
7 of course that of the MNR. By specialized equipment I  
8 mean, of course, water bombers such as CL 215s which  
9 are often required to fight the very large wild fires  
10 in the northwestern part of the province, so it's a  
11 good technique but somewhat limited because of these  
12 reasons in our view.

13 Moving on to the fourth method of site  
14 preparation which is the combined measures. Various  
15 combinations are possible. The most common ones would  
16 be chemical site preparation followed by prescribed  
17 burning and/or mechanical site preparation. It's  
18 possible to have all three in combination if slash  
19 loadings are sufficient on the site and if competition  
20 levels are high.

21 An example of this combined site  
22 preparation approach can be found in the Abitibi-Price  
23 spruce fir cover type case study No. 4C which Mr.  
24 Squires could perhaps elaborate on.

25 Q. Mr. Squires, could you do that



1 please?

2 MR. SQUIRES: A. Yes, I can. In the  
3 case study 4C of Abitibi-Price at the Lakehead we  
4 combine chemical site preparation with mechanical site  
5 preparation and on part of the case study two separate  
6 mechanical site preparations.

7 The initial reason for the chemical was  
8 to kill and dry out the dense advanced growth of brush  
9 and non-desirable species and make it brittle so that  
10 when mechanical site preparation is applied it would  
11 break up and become incorporated into the soil.

12 The second method of site preparation was  
13 a marden chopper and it was chosen specifically to  
14 break up that now dead material and, in fact,  
15 incorporate it into the soil, but at the same time,  
16 because of the site conditions of the soil, we wanted  
17 to retain the organic mat or duff layer on top and not  
18 remove any more than absolutely necessary.

19 The second piece of equipment planned and  
20 in fact applied on part of the area was a Bracke patch  
21 scarifier and it was chosen also because of it's small  
22 area of organic removal that is necessary to create a  
23 planting microsite.

24 I elaborated in the case study that those  
25 were the plans and they were in fact applied on part of

1 the area, but because of prevailing conditions at the  
2 time of site preparation we had to substitute a tractor  
3 with a blade to complete the job. That then was the  
4 mix of site preparation techniques used on your case  
5 study.

6 Q. Thank you, Mr. Squires. Are there  
7 then, Mr. Nicks, dealing with the last form of site  
8 preparation, circumstances in which Industry timber  
9 managers do not engage in any form of site preparation?

10 MR. NICKS: A. Yes, occasionally that  
11 situation arises. For example, where slash loadings  
12 are light or where duff layers are thin enough to  
13 prevent either direct planting or seeding, it's  
14 possible to avoid site preparation completely and this  
15 is most common on full-tree log black spruce sites, for  
16 example, in the Clay Belt and which Mr. Gemmell can  
17 perhaps elaborate on.

18 Q. Mr. Gemmell, back to you.

19 MR. GEMMELL: A. Yes, that's correct.  
20 In our lower sites, the black spruce lowland sites  
21 where there is full-tree logging, as I mentioned  
22 before, the slash is removed as full-tree logging and  
23 there is no requirement on most of those sites to site  
24 prepare the area and, at the same time, there is  
25 considerable advanced growth there so that site

1 preparation would not be desirable.

2 Q. I know you will be describing these  
3 later, but are the lowland sites where no site  
4 preparation occurs, in the situations you have  
5 described, those where natural or artificial  
6 regeneration as a general rule is employed?

7 A. Generally speaking we are talking  
8 natural regeneration.

9 Q. Thank you. Does that then complete,  
10 Mr. Nicks', your evidence regarding the site  
11 preparation techniques used by the Industry?

12 MR. NICKS: A. Yes, it does.

13 Q. Thank you. Mr. Squires, you  
14 indicated earlier that you would be dealing with the  
15 regeneration component of Figure 3.

16 Could you outline for the Board, please,  
17 in a similar fashion the considerations of the Industry  
18 regarding the regeneration alternatives available to  
19 it?

20 Perhaps I should ask you to start in the  
21 same way that Mr. Nicks did by indicating first the  
22 extent of the regeneration efforts engaged in by the  
23 Industry in the area of the undertaking?

24 MR. SQUIRES: A. The regeneration  
25 activities engaged in by the Industry in the area of

1 the undertaking include the four boxes located under  
2 Regeneration in the overhead.

3 The first activity shown here is  
4 planting, the second is direct seeding, the third is  
5 natural regeneration and we have a fourth combining the  
6 three previous ones.

7 Q. And dealing with the extent of the  
8 regeneration efforts of the Industry in the area of the  
9 undertaking, can you assist the Board in that?

10 A. Yes. I am sorry, Ms. Cronk, I can.  
11 I would like to go to a slide to help me illustrate  
12 that.

13 Q. What is this slide of, Mr. Squires?

14 A. This is a slide that illustrates the  
15 area of regeneration on Crown lands during the period  
16 1981 to 1988. It includes all artificial regeneration  
17 and some of the natural regeneration during that  
18 period.

19 The graph shows a general increase in the  
20 regeneration effort over the period that the slide  
21 shows, and it shows that in 1981, Madam Chair, the year  
22 after the first FMA was signed there was a total  
23 regenerated of approximately 95,000 hectares and in  
24 1988 the area regenerated had risen to approximately  
25 125,000 hectares. That is a total increase of



1 approximately 32 per cent over that period.

2 Q. And what is the source of this graph,  
3 Mr. Squires?

4 A. This graph is from the statement of  
5 evidence of Industry, the renewal panel, and it is  
6 Figure 5 found on page 72. It is a part of that  
7 figure.

8 Q. And can you indicate for the Board  
9 what the various reviews of the FMAs undertaken to date  
10 have indicated with respect to the level of  
11 regeneration activity being engaged in by the Industry?

12 A. Yes, Madam Chair. To do that I have  
13 another slide.

14 This slide of the regeneration levels  
15 before and after FMA signing shows similar to what Mr.  
16 Nicks showed relative to site preparation. It is the  
17 results reported in the four five-year reviews that  
18 have been done on FMAs to date; namely, the reviews  
19 based on the FMAs signed in 1980, that is the first  
20 review; the second review, those signed in 1981; the  
21 third review, those signed in 1982; and the fourth  
22 review, for those FMAs signed in 1983.

23 MS. CRONK: And that forms part, for the  
24 record, Madam Chair, of Exhibit 1142.

25 Q. And what do the results indicate, Mr.

1 Squires?

2 MR. SQUIRES: A. The graph shows columns  
3 in two separate colours, blue and what I will call  
4 pink. The blue columns are the areas of regeneration  
5 that were carried out prior to the signing of the FMAs,  
6 the first five years prior to -- or last five years  
7 prior to the signing of the FMA. The pink columns  
8 refer to the first five years regeneration effort  
9 following the signing of the FMAs.

10 If we go to the first review, that would  
11 have been 1980, we will see that forty-seven thousand,  
12 approximately, seven hundred hectares were treated in  
13 the last five years prior to the signing, and the next  
14 five years after the signing there was approximately  
15 68,000 hectares treated for a total increase of 43 per  
16 cent.

17 In the second five-year review there was  
18 a total of 16,600 hectares treated prior to the signing  
19 of the FMA, in the first five years following there was  
20 21,480 hectares for a 29 per cent increase.

21 In the third five-year review the change  
22 went from 17,000 prior to the signing to 39,000 after  
23 the signing for a 132 per cent increase.

24 And in the fourth and final review the  
25 change goes from 7,000 approximate hectares prior to

1 the signing to 16,900 approximate after the signing for  
2 a 141 per cent increase.

3 Combining the four five-year reviews we  
4 see that from the period before the signing, the last  
5 five years; there was a 65 per cent increase when we  
6 got into the first five years after the signing.

7 That is all of the slides at the moment.  
8 Thank you.

9 Q. Well, could we deal with the subject  
10 of artificial regeneration as it is approached and  
11 utilized by the Industry. What, Mr. Squires, from the  
12 Industry's perspective in general terms is the basis  
13 for the need for artificial regeneration in the area of  
14 the undertaking?

15 A. The Industry has a position of  
16 ensuring a predictable and continuous current and  
17 future supply of quality raw material to the Industry's  
18 mills. It is the fundamental of objective of proper  
19 timber management in the area of the undertaking.

20 To achieve this objective, artificial  
21 regeneration programs are essential since natural  
22 regeneration alone will not provide the needs of  
23 Industry and the province.

24 Q. Do you have a copy available to you,  
25 Mr. Squires, of Interrogatory No. 13 delivered by

1 Forests for Tomorrow?

2 A. Yes, I do.

3 Q. The position that you have just  
4 outlined is stated in the statement of evidence, Mr.  
5 Squires; that is, in Panel 8, and an interrogatory with  
6 respect to it was delivered by Forests for Tomorrow.

7 Can you outline for the Board, please,  
8 what the nature of the enquiry was and then the  
9 response of the Industry as to the enquiry made?

10 A. Well, the nature of the enquiry was  
11 that it was questioning the statement I just made and  
12 it asked for the evidence on which the statement was  
13 based.

14 The answer reply was that in the  
15 collective professional opinion of the Industry's  
16 foresters that the only alternative open to the  
17 Industry to ensure that current harvest volumes can be  
18 sustained is to continue to undertake higher yield and  
19 artificial regeneration in combination with natural  
20 regeneration efforts.

21 Q. Why?

22 A. That was based on the fact that in  
23 our opinion artificial regeneration better ensures full  
24 stocking on the more productive sites and will make  
25 higher volumes available at an earlier age in rotation.



1                   And, secondly, that planting, which is a  
2                   major component of artificial regeneration, provides  
3                   near optimum tree spacing that, will ensure maximum  
4                   individual tree growth and decreasing the time at which  
5                   the required merchantable volumes are available for  
6                   harvest.

7                   And, thirdly, natural regenerated stands  
8                   are generally successful in meeting the stocking  
9                   standards that are artificially regenerated stands.

10                  And fourthly, many FMAs have a  
11                  preponderance of overmature forests and the MAD  
12                  calculation determines an accelerated cut in set  
13                  circumstances and the cut won't be allocated and  
14                  harvested according to the contractual terms of the  
15                  FMA.

16                  As the age of the forest is reduced to a  
17                  more normal level, the MAD levels and allocations  
18                  decline. This increases the area of the forest and the  
19                  associated...

20                  MS. CRONK: Sorry, Mr. Squires, could you  
21                  just hold on a moment.

22                  ---Discussion off the record.

23                  MS. CRONK: Q. Mr. Squires, there was a  
24                  fourth component to or reason that you were outlining  
25                  to the Board a few moments ago. Could you repeat it,

1 please, as to why it is felt by the Industry a  
2 continued combination of artificial regeneration with  
3 natural regeneration methods is required in the area of  
4 the undertaking?

5 MR. SQUIRES: A. Yes. Madam Chair, the  
6 fourth reason I was giving was that many FMAs have a  
7 preponderance of overmature stands and the MAD  
8 calculations in set circumstances determine an  
9 accelerated harvest or accelerated allocation which  
10 must be harvested according to the contractual terms of  
11 the FMA. That has the effect of reducing the MAD over  
12 time and the associated harvest levels.

13 Therefore, an artificial regeneration  
14 program is essential to maximize future volumes on he  
15 reduced areas in order to sustain the harvest.

16 Q. Recognizing then what the Industry  
17 has indicated with respect to the need for both  
18 methods, could you summarize in general terms for the  
19 Board what the Industry's perspective on the advantages  
20 of artificial regeneration over natural regeneration?

21 A. Well, Madam Chair, both natural and  
22 artificial regeneration are effective in appropriate  
23 circumstances, however, artificial regeneration offers  
24 some advantages.

25 Those advantages I would group under more

1 consistent spacing and higher yield, more control over  
2 the species compositions of the stands, and greater  
3 economy in overall timber management activities which  
4 comes about by the more concentrated area through  
5 access, harvesting, renewal and maintenance.

6 Natural regeneration will not ensure a  
7 full stocking on most productive sites, so it would not  
8 have those same advantages.

9 Q. Well, just dealing still then with  
10 artificial regeneration and perhaps dealing first with  
11 planting, if an Industry timber manager has decided  
12 that planting is the appropriate artificial  
13 regeneration option to be followed, what generally then  
14 are the next options available to him or her in  
15 proceeding with a planting program?

16 A. The basic options that are then  
17 available are in planting a choice of species, the  
18 choice of stock types and the choice of stock grades.  
19 These operations have already been described by Mr.  
20 Waito in his evidence in Ministry's Panel 11, so I  
21 won't elaborate more.

22 But I will point out that in the bareroot  
23 and container types there are today different growing  
24 regimes which increases the choice or options available  
25 in the planting stock.

1 Q. Are there, in the Industry's view, in  
2 certain situations advantages to planting?

3 A. Yes, there are some advantages,  
4 particularly that of prompt regeneration which has some  
5 effect on shortening the rotation of the stand, Madam  
6 Chair. Additionally planting captures the benefits of  
7 the site preparation giving the planted tree an  
8 advantage over the competition.

9 Planting also governs the spacing, as I  
10 have mentioned, and the density of the stand the  
11 species composition and gives a greater opportunity to  
12 have impact on the genetic makeup of the stand. It  
13 also increases the freedom to use various types of  
14 machinery, both in the harvesting and site preparation  
15 phases, and it results in an increased choice of  
16 microsite for the seedling.

17 I should add to the advantages, the  
18 disadvantage of planting is that in some cases it's  
19 neither appropriate nor cost effective.

20 Q. Are those advantages and  
21 disadvantages factors which generally are taken into  
22 account by Industry managers in deciding whether or not  
23 to plant?

24 A. Well, in making a decision as to  
25 whether or not to plant I would take into account the



1 following factors: the availability of appropriate  
2 equipment to the timber manager; whether or not there  
3 is a reliable labour force available in the area; the  
4 availability of planting stock, both in numbers and  
5 quality, I might add; the time available to organize a  
6 plant, which can be considerable. An additional factor  
7 is the suitability of access or availability of it. So  
8 all of those factors impact on choice of whether or not  
9 planting should be taking place.

10 MADAM CHAIR: Excuse me, Mr. Squires,  
11 could you remind the Board of the difference in  
12 rotation ages.

13 We heard evidence that the rotation age  
14 for the plantations might be the order of 80 years  
15 versus rotation age for naturally regenerated areas  
16 that might be 100 to 140 years, and I know that is  
17 species dependent.

18 MR. SQUIRES: Well, the rotation ages  
19 would vary, Madam Chair, relative to site and the type  
20 of species that were planted. I wouldn't be able to  
21 pin down a particular rotation for a plantation as  
22 such, but in mentioning the shorter rotation, at this  
23 point what I am referring to is the slight gain that  
24 one gets by planting immediately or as soon thereafter  
25 as possible following the harvest.

1 I will be speaking to rotation age again  
2 later in discussion on stocking, if I could be  
3 permitted to wait until then.

4 MADAM CHAIR: Yes.

5 MR. SQUIRES: Thank you.

6 MS. CRONK: Q. Perhaps I could ask just  
7 at this stage: Mr. Nicks, can you assist at all in  
8 terms of rotation ages in respect to specific species  
9 at this stage?

10 MR. NICKS: A. Well, I can suggest for  
11 jack pine plantations as an example, the general  
12 recognition in our company is that the rotation age  
13 will be reduced from the current 70 year rotation age  
14 for natural stands, fire origin stands, to at least 60  
15 years of age, and I would suggest in all likelihood  
16 something in the neighbourhood of perhaps 55 years  
17 because of the benefits of regulated spacing from the  
18 outset.

19 But that is something to be determined  
20 only over time as our plantations mature and  
21 unfortunately don't have the history in Ontario, as the  
22 Board has probably heard, of mature plantations in the  
23 area of the undertaking to draw upon. But that is our  
24 best estimate at this time.

25 Q. Mr. Gemmell, the Board knows from

1 your case study that there were both artificial  
2 regeneration and natural regeneration activities  
3 undertaken. Are you in a position - and, if not,  
4 please indicate so - are you in a position to comment  
5 on the comparative rotation ages of black spruce in  
6 those circumstances, artificial versus natural?

7 MR. GEMMELL: A. Well, of course we are  
8 talking different sites, so the rotation age I would  
9 expect on an uplands spruce site, the best of  
10 plantations, may be in the area of 70 years and that is  
11 purely conjecture but hopeful, as opposed to rotation  
12 ages on upland sites that may be in the order of 90 to  
13 110 years in the natural environment.

14 If you go down to the lower sites the  
15 rotation ages there in the present and natural  
16 condition are at least 120 years, and when you really  
17 look carefully at the rings there is an establishment  
18 period way back at the origin of the stands that could  
19 be up to 40 years of growth that is very hard to even  
20 identify when you are looking at the rings; so, in  
21 other words, the natural low sites take a very, very  
22 long time.

23 In those low sites in the methods that we  
24 are using now, there would be some gains but our method  
25 again generally is natural regeneration, so there is

1 still a long period.

2 But the advanced growth technique that we  
3 are using gives us a jump on that and the fact that  
4 that advanced growth could be anywhere from one year to  
5 30 years old depending on the advanced growth itself.  
6 So it's a little bit complicated.

7 Q. I understand. Thank you, Mr.  
8 Gemmell. I will invite you, Mr. Squires, later to  
9 return to this issue in the course of your further  
10 evidence.

11 MR. SQUIRES: A. Thank you.

12 MS. CRONK: If that is of assistance at  
13 this point, Madam Chair.

14 MADAM CHAIR: Yes, thank you.

15 MS. CRONK: Q. Mr. Squires, the Board  
16 has received evidence again from Ministry of Natural  
17 Resources witnesses regarding the efforts that are made  
18 from the Ministry's point of view to assess the  
19 performance of various planting efforts; that is, to  
20 monitor and to determine the success, failure, staging  
21 of planting efforts.

22 Are planting activities undertaken by the  
23 Industry monitored by the companies themselves?

24 MR. SQUIRES: A. Yes, they are, Ms.  
25 Cronk. For the Board's benefit I would elaborate some.



1 All planting actually is monitored to  
2 ensure that quality is maintained. Actually in our  
3 evidence package, statement of evidence there is an  
4 example by E.B. Eddy of the type of data that is  
5 collected on a plantation. In addition to that, in  
6 Abitibi-Price's case study 4C, an appendix to that, I  
7 guess Appendix 2, there is also an example of  
8 information collected.

9 Q. All right. Well, if we could start  
10 with the first that you mentioned, the example from  
11 E.B. Eddy. Where do we find that in the statement of  
12 evidence?

13 A. That is in Appendix A to the  
14 statement of evidence.

15 Q. All right. And either Mr. Waddell,  
16 Mr. Nicks, could you explain to the Board - whichever  
17 of you you feel appropriate - what the nature of the  
18 documentation and information is that is contained in  
19 that appendix and how it's used by E.B. Eddy with  
20 respect to planting efforts?

21 MR. NICKS: A. Yes, I will speak to  
22 that. Could I perhaps draw the Board's attention to  
23 Appendix A to which Mr. Squires has referred to, it's  
24 Appendix A of our renewal statement of evidence.

25 In Appendix A there are a total of six

1 forms and three forms -- the first three forms refer to  
2 bareroot stock, and the second three forms to container  
3 stock.

4 Turning first to the bareroot stock, form  
5 1A refers to planting quality assessment on an  
6 individual basis; and the form 1B refers to the daily  
7 summary of bareroot planting stock quality; and form 1C  
8 refers to handling in the field since bareroot stock in  
9 particular is very sensitive to mishandling it's  
10 important that all of the attributes or conditions that  
11 are listed on form 1C are followed.

12 The second set of three forms are  
13 essentially the same, slightly different in the  
14 parameters that are assessed, but again those refer  
15 to -- the form 2A, for example, refers to planting  
16 quality by a foreman who is responsible for a crew; the  
17 form 2B is a daily summary of the foremen and their  
18 crews, in other words, the performance recorded on form  
19 2A is summarized on form 2B; and the form 2C refers  
20 again to container stock handling because of course the  
21 parameters assessed are different.

22 Just out of interest, 95 per cent of our  
23 planting is now done with container stock. So these  
24 latter three forms are quite important.

25 Q. Who is responsible for filling out

1       these forms in your company, Mr. Nicks?

2               A. Well, it varies. We do tree planting  
3 both internally within the company - if I can describe  
4 them as company plants - and we also do about half of  
5 our planting on a contractual basis, and so the  
6 assessment system is essentially the same but the  
7 conduct of it is somewhat different.

8               In the case of company plants, the  
9 foreman conducts a written survey of each planter each  
10 day, approximately 50 to 100 trees, that is one of his  
11 responsibilities. In addition, the company quality  
12 control assessor who is usually a forester assesses a  
13 hundred trees per crew at a maximum every second day,  
14 but normally every day. So the foreman is responsible  
15 for assessing his own people and he in turn is assessed  
16 by a quality control assessor.

17              On contract plants Eddy employs its own  
18 quality control assessor who assesses every planting  
19 block within 48 hours of release, but informal checks  
20 are also conducted on the day of planting by the same  
21 company assessor. In case problems develop they can be  
22 corrected immediately.

23              And as a third check on quality on  
24 contract plants, most contractors themselves employ  
25 their own quality assessors. Since payment is directly

1 based on quality, they have a vested interest in  
2 maintaining very high quality levels.

3 So in our opinion these quality checks  
4 effectively safeguard the plantation from the outset.

5 Q. Mr. Squires, Mr. Gemmell, you are  
6 both employed by Abitibi-Price Inc. in different parts  
7 of the north. In your areas, are forms of this kind or  
8 documentation of this nature utilized with respect to  
9 planting efforts by your company, Mr. Gemmell?

10 MR. GEMMELL: A. Yes, they are very  
11 similar the forms that are used by our company.

12 Q. And, Mr. Squires, in your area?

13 MR. SQUIRES: A. Somewhat similar forms,  
14 yes.

15 Q. Mr. Ferguson, what does your company  
16 do?

17 MR. FERGUSON: A. Yes. Canadian Pacific  
18 conducts planting quality assessments as well. The  
19 structure of the forms is somewhat different, but the  
20 parameters assessed are essentially the same.

21 Q. And will you be describing that form  
22 of monitoring when you outline for the Board what is  
23 involved in the renewal activities in your case study,  
24 the types of forms used and the quality control for  
25 planting?



1                   A. Yes. In the case of Canadian Pacific  
2 I have examples of forms and assessment procedures  
3 which I will be discussing, however, they do not relate  
4 to planting since the Canadian Pacific case study is an  
5 example of direct seeding rather than planting  
6 activity.

7                   Q. Sorry. Is there the same form then  
8 of monitoring your quality control effort with respect  
9 to seeding?

10                  A. Yes, there is monitoring procedures  
11 that are carried out with respect to seeding.

12                  Q. Thank you. Then, Mr. Squires,  
13 returning to you, if we could. Again still dealing  
14 with planting as a particular form of artificial  
15 regeneration, the Board has heard evidence from Mr.  
16 Hynard and others regarding the stocking standards set  
17 out under the FMA agreements which various Industry  
18 companies have entered into.

19                   First, are you familiar with them?

20                  MR. SQUIRES: A. Yes, I am.

21                  Q. Do they, in your experience, apply to  
22 both artificially and naturally regenerated areas?

23                  A. Yes, they do.

24                  Q. And from the Industry's perspective,  
25 can you tell the Board what is the significance or

1 importance of the stocking standards set out under the  
2 FMA agreements?

3 A. Yes, I will. Madam Chair, Mr.  
4 Martel, in an FMA Industry is directly responsible for  
5 regeneration to certain stocking standards.

6 The Board has heard, as Ms. Cronk has  
7 just mentioned, from Ministry witnesses; however, I  
8 would like to get into the variations that occurs  
9 relative to individual FMAs, the forest units and the  
10 site and the chosen regeneration methods and the  
11 regeneration objectives. In most of the ground rules  
12 there are variations in the stocking standards for  
13 those various items.

14 In the discussion of stand stocking and  
15 density I am sure were -- all were very confusing. I  
16 will try to shed some light, Madam Chair.

17 Stocking is spacial and it's measured by  
18 the absence or presence of the appropriate tree in a  
19 standard plot; density, on the other hand, is the  
20 number of trees in a plot or an unit of area. Stocking  
21 though is the usual term referred to in describing FMA  
22 regeneration standards.

23 I would like to now get more into a  
24 discussion of the stocking standards. Under a typical  
25 FMA program the per cent stocking, I would like to

1 explain the calculation of it relative to an overhead.

2 This appears like a very simple formula  
3 but it's difficult to follow just a word description of  
4 it. What we have is a division of -- to calculate per  
5 cent stocking, we divide the number of quadrates or  
6 plots that have acceptable seedlings in a sample. You  
7 multiply that by 100 and divide by the total number of  
8 quadrates sampled. That calculation will provide the  
9 per cent stocking as shows up in the various table 1s  
10 of the FMA ground rules.

11 Q. Is that formula contained in the  
12 Panel 8 statement of evidence?

13 A. Yes, it is.

14 MS. CRONK: To assist the Board, that is  
15 found in Appendix B.

16 Q. What, Mr. Squires, in your experience  
17 is the relevance of the suggestion or concept of 100  
18 per cent stocking?

19 A. Madam Chair, 100 per cent stocking  
20 really as it relates to four square metre quadrates or  
21 plots really has no relevance as to whether it is good  
22 or bad to standing on its owns. It's a merely a  
23 statement that 100 per cent of the sample quadrates  
24 have acceptable seedlings.

25 Different species would require different

1 growing space per tree. In the natural boreal forest  
2 100 per cent stocking is seldom experienced except in  
3 extremely dense conditions.

4 For the Board's benefit, I would state  
5 that in my career I have sampled in excess of 12,000 of  
6 those quadrates that I'm talking about and I cannot  
7 recall ever seeing in an area in excess of 10 hectares  
8 that I would class as 100 per cent stocked, and coming  
9 from Newfoundland where the trees go up to 100,000 per  
10 hectares that's a significant statement.

11 Q. I understand that the Industry and in  
12 particular yourself, Mr. Squires, undertook a study or  
13 a survey - could you tell me which to appropriately  
14 describe it - to illustrate some of these points to the  
15 Board.

16 Could you outline for the Board the  
17 nature of the work that was done and proceed to  
18 describe what was entailed?

19 A. Yes. During the spring of 1988 and  
20 the summer of 1989 a number of stands within the area  
21 of the undertaking were sampled by Industry to study  
22 the range of stocking and density for the purpose of  
23 illustrating to the Board certain of the practical  
24 field implications of established stocking standards.

25 I would outline it basically this way,



1 the survey. My discussion will compare stands of  
2 various stocking and it will relate them to the  
3 standards that we are familiar with in the various  
4 groundrules. Each stand in the survey is represented  
5 by a sample plot. Each plot in the field is a square  
6 of four -- square of 100, I'm sorry, four square metre  
7 quadrates. That's a square of four quadrates to the...

8 Q. When you say quadrate what do you  
9 mean?

10 A. It's a square basically.

11 Q. So we have a square of squares?

12 A. That is correct. A square made up of  
13 100 smaller squares.

14 In addition to the plots being laid out,  
15 I will illustrate these plots in the form of a slide  
16 taken off a television screen or a computer monitor  
17 which displays the plots from a geographic information  
18 system.

19 That's going to visualize the situation  
20 I'm talking about, but in addition I have slides taken  
21 within the relevant stands to help again to visualize.

22 Q. All right. Well, perhaps before you  
23 do that, could you outline for the Board why this study  
24 was undertaken?

25 A. The study was undertaken to

1 demonstrate the relationships between stocking and  
2 density. Firstly, full stocking is not necessarily 100  
3 per cent; and, secondly, that 40 per cent stocking can  
4 yield acceptable volume.

5 Thirdly, that an objective spacing of six  
6 feet or 1.83 metres generally comes out to about 75 to  
7 80 per cent stocking in most operational plantations  
8 that I have experience with.

9 Fourthly, black spruce plantations are  
10 similar in their appearance to natural stands of that  
11 species and are superior in merchantable volume.

12 Fifthly, a natural mixed wood  
13 regeneration of the softwood working group stocking as  
14 low as 33 per cent and total stocking of all species of  
15 54 per cent can be an acceptable stand.

16 Q. Acceptable in what sense?

17 A. Acceptable in that they will have  
18 merchantable volumes that by today's standards are  
19 acceptable to the Industry.

20 Q. And that's with a stocking standard  
21 of what?

22 A. In this case I'm talking about a  
23 stocking standard for softwoods of 33 per cent.

24 Q. All right. How were the study plots  
25 established for the purposes of this review?

1                   A. The plots were established in stands  
2 that were selected because they suited the various  
3 criteria we were trying to illustrate. We looked for a  
4 hundred per cent stocked stand, but as I've earlier  
5 elaborated on we couldn't find one.

6                   We looked for and found a precisely  
7 spaced plantation at 1.83 metres or six-foot spacing  
8 and an additional one at 3.6 metres or 12-foot spacing,  
9 those are two black spruce stands. We also found  
10 mature natural stands with high merchantable volume - I  
11 emphasize high - and high stocking and density of pure  
12 mixed wood conditions. These are two separate stands  
13 I'm talking about here.

14                  We found mature natural stands or we were  
15 looking for mature natural stands with no stocking and  
16 we also sampled typical recent plantations within an  
17 FMA by current stocking standards or current spacing.

18                  Q. Where will the Board find the details  
19 of this review within the statement of evidence?

20                  A. The detail of this is found in  
21 Appendix B of the statement of evidence, Panel 8.

22                  Q. Could you outline for the Board then  
23 what was done and your comments concerning the  
24 conditions observed?

25                  A. I will be describing the plots with

1 the use of slides and I would like the slides turned on  
2 at this moment.

3 This is plot 1 as described in Appendix  
4 B. The plot 1 is a precise plantation. It's the  
5 six-foot spacing plantation which I described and it's  
6 located in a spacing trial that was established  
7 approximately in 1951 I think - it was 1951 - down at  
8 the provincial tree nursery here in Thunder Bay. The  
9 plot was laid out in March of 1988.

10 In theory, in this plantation there would  
11 be 2,990 trees per hectare if there were laid out at  
12 exactly 1.83 metre spacing.

13 Q. What is the relevance of the 1.83  
14 metre spacing?

15 A. It is identical to the six-foot  
16 spacing and that is generally the spacing that Industry  
17 plants black spruce in particular in the area of the  
18 undertaking.

19 Q. And I understand that there was an  
20 interrogatory delivered by Forests for Tomorrow dealing  
21 simply with the number of trees per hectare that you  
22 referred to as theoretically being equivalent to a  
23 hundred per cent stocking; is that correct?

24 A. Yes, there was. The question was:  
25 What was the significance of the figure, what does it



1 signify and in that interrogatory I pointed out that  
2 the figure that's included in the text of Appendix B  
3 was inaccurate. It was 2,916 trees per hectare, but in  
4 actual fact it is 2,990.

5 The figures are different because of  
6 changing from Metric to -- Imperial to Metric. The  
7 numbers change somewhat in the rounding.

8 Q. All right. What interrogatory number  
9 are you referring to so that we can make that change?

10 A. Forests for Tomorrow interrogatory  
11 No. 16.

12 Q. Okay. And where in the text should  
13 that correction be made? Where in the text of Appendix  
14 B, can you help me with that? Perhaps you could look  
15 at that over the noon hour and let me know this  
16 afternoon, Mr. Squires?

17 A. I will do that.

18 Q. Thank you. What does this depiction  
19 of plot No. 1 indicate?

20 A. This plot then, Madam Chair, is an  
21 illustration of the plot as laid out in the field. It  
22 is photograph of a computer screen. It shows the large  
23 plot area made up of 100 separate quadrates. The  
24 quadrate being the smaller squares surrounded by dashed  
25 lines.

1                   The sample that we are looking at here  
2                   has 2,650 seedlings per hectare and it shows the  
3                   seedlings distributed around through the quadrates.  
4                   The stocking is determined here by counting the number  
5                   of quadrates that have a seedling present and if we  
6                   count the quadrates with seedlings here we will find  
7                   that 90 of them have planted seedlings. That's  
8                   including living and currently dead trees.

9                   The plot at 38 years old, Madam Chair,  
10                  has 441 cubic metres of merchantable wood. That is  
11                  significant in that the Spruce River Forest, which I am  
12                  responsible for, the average volume per hectare harvest  
13                  in the area to harvest moves up and down between  
14                  approximately 85 to 95 cubic metres per hectare.

15                  So we normally harvest in excess of 90  
16                  years in black spruce, yet here we have a stand that is  
17                  from plantation at 38 years old with one and a half  
18                  times the volume that we normally harvest.

19                  Q. What does it mean, Mr. Squires, when  
20                  it says on the top of the slide Description  
21                  Experimentally Controlled Plantation?

22                  A. This stand, Madam Chair, Mr. Martel,  
23                  is a stand that was laid out in 1951 to study the  
24                  effect of spacing on the survival of the trees.

25                  In this case, this was the densest

1       plantation of black spruce at, say, the six-foot  
2       spacing. There were other plantations at the 12-foot  
3       spacing, which I will discuss later, and an eight-foot  
4       -- or nine-foot spacing. There were additional studies  
5       for other species, white spruce and red pine.

6               I would next like to move to plot No.  
7       2 -- I'm sorry, there are some photographs of plot No.  
8       1, internal photographs of the stand. This is a  
9       picture taken in the winter of 1988 and it shows the  
10      planted trees within or right on the edge of the plot  
11      that I've just described. It shows a fairly even  
12      spacing and in relatively straight lines the trees are  
13      laid out. They were out laid out in long furrows of  
14      plowed ground.

15              The ground here was somewhat like a  
16      farmer's field. In fact, questioning people who knew  
17      most about it, they suggested it may have been a potato  
18      farmer's field prior to planting.

19              Q. I'm sorry, what photograph No. was  
20      that?

21              A. I'm sorry, that was photograph No. 2.  
22      We now have photograph No. 3 and it shows a gentleman  
23      measuring the diameter of the tree. He is there to  
24      show the current diameter.

25              Madam Chair, the current diameters in

1       that stand are similar to those that we will harvest in  
2       this area of the undertaking in lowland black spruce.  
3       We find it very desirable wood to harvest.

4                   Q.   And that last was photograph No. 3?

5                   A.   Yes.

6                   Q.   Thank you.  I'm sorry, before you  
7       move into plot 2 then, what are we, in your view, to  
8       take from the depiction of conditions in those two  
9       photographs and the volume and the stocking indications  
10      in plot No. 1?

11                  A.   In plot No. 1, Madam Chair, the  
12      message I would like you to get is that one perfect  
13      precision was not possible in the plantation.  I will  
14      go back and point out there is some slight variation  
15      from the straight lines in the plantation and this was  
16      a long a furrow done by a farmer's plow.

17                  Additionally, if we look at the plot,  
18      looking from the lower left side generally toward the  
19      top right side we will see the linear nature of the  
20      plantation.  There is variation from the straight line  
21      shown here, although I should state some of that  
22      variation is due to the precision of the survey method  
23      carried out and this precision varies because of the  
24      trees obstructing straight line views and the ability  
25      to layout a chain or string on the ground and not have



1 to curve around a tree.

2 The point I wish to make here is that the  
3 variation away from the straight line causes some of  
4 the reduction in stocking from 100 per cent. This is  
5 why it becomes almost impossible to get 100 per cent  
6 stocking in the bush because of this variation of  
7 spacing.

8 In the densest stands you will find areas  
9 where there will be vacant quadrates and I will point  
10 to one in the centre left of the plot here. From my  
11 angle it appear to be a vacant one. This plot is  
12 vacant even though there is a tree at the corner. It  
13 is hard from my angle to determine whether it's in the  
14 next one or in the one I'm trying to describe as  
15 vacant, but bear with me.

16 This tree could be over in the adjacent  
17 one. In the situation that it is, this is a  
18 non-stocked quadrate. Not so much because of the  
19 standing under stock, but purely because the spacing is  
20 slightly off from perfect of six-foot or two metres and  
21 that quadrate fell into a gap between the trees.

22 Now, my professional opinion is that that  
23 gap between the trees does not impact on the ability of  
24 that individual seedling to grow and its potential.

25 Q. Then plot No. 2?

1                   A. Plot No. 2 I've described as being,  
2                   again, a precise plantation. That's one that's been  
3                   laid out at 12-foot spacing or 3.66 metre spacing.

4                   In theory, if the trees were exactly  
5                   spaced this plot would have 747 trees per hectare. In  
6                   fact, it does have 775 trees per hectare and it is 31  
7                   per cent stocked.

8                   The theory would have it that it would be  
9                   30 per cent stocked and the variation again here is due  
10                  to some imprecision in the survey method again because  
11                  of obstruction by trees, et cetera, and the inability  
12                  to layout a straight line. There is some variation  
13                  from the perfect spacing of the trees in addition to  
14                  that.

15                  Q. How old was this stand at the time  
16                  the measurements were taken?

17                  A. The stand was 38 years old, 38  
18                  growing seasons from the date of planting at the  
19                  time -- I'm sorry, 37 years from the time of planting  
20                  at the time the plot was laid out.

21                  Q. I'm sorry, you may have said this, if  
22                  you did I missed it, but where is the plot located?

23                  A. The plot is located - plot 1 - on the  
24                  the spacing trials located at Thunder Bay nursery here  
25                  in Thunder Bay out at the Papoonge Township.

1                   The current merchantable volume at the  
2                   time the plot was sampled was 92 cubic metres per  
3                   hectare. You've already heard me say that's equivalent  
4                   to the average that Abitibi-Price is logging today on  
5                   the Spruce River Forest.

6                   So we have a plot here that is 31 per  
7                   cent stocked and 37 years old that is equal in volume  
8                   to stands that we are harvesting today in excess of 90  
9                   in years in black spruce.

10                  The message that I would like the Board  
11                  to receive from this is that plantations with stocking  
12                  as low as 30 per cent can yield acceptable volumes at  
13                  very young ages and they're similar in appearance when  
14                  viewed from the side and from overhead, and to  
15                  illustrate that last point of my message I would show  
16                  some more slides from within and outside the stand.

17                  This will be slide No. 5 and it's a view  
18                  between the rows of trees in plot No. 2 which was  
19                  12-foot spacing. It shows the branches closing near  
20                  the tree base, yet practically all of the growing space  
21                  today is being utilized by trees.

22                  Similarly, looking up toward the crowns,  
23                  we see the crowns that are continuous almost from the  
24                  ground up to the top. Again, the growth space being  
25                  utilized.

1 Q. Sorry, what photograph number was the  
2 last one?

3 A. That was photograph No. 6.

4 Q. Thank you.

5 A. We now have photograph No. 7. This  
6 is an external view of a 12-foot space stand in the  
7 area of the plot. It shows the appearance of being a  
8 very fully stocked stand. There can be no open space  
9 viewed through it and to the observer it appears as a  
10 very fine forest.

11 Q. What photograph was that?

12 A. There was plot No. 7.

13 Q. Photograph No. 7?

14 A. Photograph No. 7, I'm sorry.

15 I have here photograph No. 8. I would  
16 like for it to be able to show what I want to describe.  
17 The two plots that I have described are located in this  
18 aerial photograph of the area of the trails out at  
19 Thunder Bay nursery. The very tightly spaced six-foot  
20 spaced plot 1 is located here in the top left corner of  
21 the photograph. The 12-foot spaced plot is located  
22 approximately at the centre of the photograph just  
23 below the centre right.

24 These photographs are included in the  
25 Appendix B, and if they could be examined you would see



1 that there is - to the casual observer - very little  
2 difference between the two plots as seen from the air.

3 Q. And just dealing with that aerial  
4 photograph, on the right-hand side toward the bottom  
5 that is which plot?

6 A. The right-hand side toward the  
7 bottom, that was plot 2.

8 Q. And its stocking was what?

9 A. It was 31 per cent stocked.

10 Q. And what was the stocking of plot 1  
11 on the top left?

12 A. Plot 1 was 90 per cent stocked.

13 Q. Thank you.

14 A. I would now like to move to plot No.  
15 3 which is contained in photograph No. 9.

16 Q. We are losing part of the slides to  
17 the curtains, Mr. Squires. I don't know whether that  
18 is because of where the screen is placed or the  
19 projector. Can you give us a moment.

20 A. Are they in fact visible?

21 Q. Sorry. What are the conditions  
22 described in plot 3, please?

23 A. Plot No. 3 is an operational  
24 plantation located on the Spruce River Forest, and for  
25 the Board's benefit I could be fairly precise that it

1 is an area that you are now familiar with.

2 It is located in block 10 of case study  
3 4C which is the Abitibi-Price case study at the  
4 Lakehead Woodlands Division at the Spruce River Forest.

5 This plantation is an operational  
6 plantation without the precise experimental design  
7 requirements; however, it was carried out with the  
8 objective spacing of six feet or 1.83 metres, so it  
9 relates in that context to plot 1. The objective  
10 spacing is identical.

11 However, in an operational plantation in  
12 the forest there are more impediments to that spacing  
13 than there were in the precise experimental layout on  
14 the farmer's field. We have rocks, we have logging  
15 slash, variations in the soil and, in fact, in a couple  
16 of places water holes that would interrupt the spacing  
17 of a plantation. So that here we do not get the same  
18 level of stocking as we had in plot 1. The stocking  
19 that we have in this plot is 78 per cent versus the 90  
20 per cent in plot 1.

21 That is almost entirely due to the  
22 variation in spacing which came about because of the  
23 ground conditions prevailing even after the intense  
24 site preparation, which I have already described  
25 relative to case study 4C.

1 Q. Sorry, what did you say the stocking  
2 was, Mr. Squires?

3 A. The stocking to black spruce, planted  
4 black spruce seedlings is 78 per cent. There are other  
5 species present, balsam fir and poplar which bring the  
6 total stocking up to 88 per cent.

7 Q. And how old was this stand?

8 A. This stand is six years -- seven  
9 years after planting at the time this block was laid  
10 out. The plot was laid out in the summer of 1989.

11 I would point out here that the number of  
12 tree seedlings that we were able to plant was 23,025  
13 versus a design total of 2,500 trees per hectare.

14 Q. What do the numbers 10, 11 and 12 in  
15 white on the slide indicate?

16 A. Those numbers indicate the location  
17 of photographs which I will now show. I can't see  
18 photograph 10 from here, but the 10 would indicate the  
19 location of photograph No. 10 and it would a panoramic  
20 view looking to the top of the photograph from the  
21 lower -- low central side.

22 Q. And on the screen, the slide that you  
23 are showing now and in the copies that have been  
24 included in the statement of evidence, the four  
25 examples, Mr. Squires, beside the No. 12 there appears

1 to be two sides of a red triangle. What does that  
2 indicate?

3 A. Those indicate the approximate view  
4 that's shown in the slide.

5 Q. Thank you. We will go now to slide  
6 No. 10 which is the slide I described on the previous  
7 slide as being toward the north edge of the plot from  
8 the south edge of the plot or the bottom of the  
9 photograph.

10 It shows a man standing up and he has in  
11 his right hand a stick that's exactly two metres in  
12 length and I would like the Board to understand they  
13 should be able to see a seedling that is adjacent to  
14 that stick and it is taller than the stick. It's  
15 approximately two and a half metres tall.

16 I will move to an additional slide, a  
17 close-up of a smaller tree in the same plot. This tree  
18 is about the average size tree in the plot. It's  
19 approximately two metres tall. These are the planted  
20 black spruce trees. That is slide No. 11.

21 Q. Sorry, could you back up to No. 11  
22 for a moment, Mr. Squires. What are the white lines  
23 that we see in this photograph?

24 A. Those white lines are string that we  
25 laid out to demarcate the quadrates.



1 Q. Where is the tree that you were  
2 referring to?

3 A. The tree I am referring to is  
4 adjacent to the two metre pole in the gentleman's left  
5 hand.

6 Q. Could you point it out, please?

7 A. I have to admit I can't see it. It's  
8 approximately here.

9 Q. Could you get up and point it out.  
10 Thank you.

11 A. Right here. It is almost the same  
12 height as the pole. (indicating)

13 Q. Thank you very much.

14 A. I will now move to slide No. 12 which  
15 is a photograph taken from the left side of the plot  
16 that's shown in the photograph of the plot. Photograph  
17 No. 9.

18 It shows the gentleman who had a two  
19 metre log standing amidst the plantation and the  
20 planted seedlings can be seen on the horizon about the  
21 height of the man.

22 This is slide No. 13 and it is an aerial  
23 photograph showing the plot area. The perimeter of the  
24 plots has been marked by ribbons tied on trees and it  
25 shows the spacing of the planted trees. The planted

1 trees are those darker spots scattered over the ground.

2 It's apparent from this photograph that  
3 that the plantation is fully stocked as practical,  
4 there are very few gaps among the planted seeds  
5 visible. I would point out, though, some of the  
6 obstructions. This would be a boulder showing through  
7 right here.

8 Q. You are pointing to the left side of  
9 the photograph?

10 A. I am pointing to the mark on the  
11 lower left-hand side of the photograph, would be a  
12 boulder. In normal circumstances that would impede the  
13 exact spacing of the plantation and would result in a  
14 reduction in the overall stocking. Not necessarily a  
15 reduction of the number of trees planted, but a  
16 reduction of the stocking because it impacts on the  
17 spacing of the seedlings.

18 Q. When you referred earlier, Mr.  
19 Squires, to plot No. 1 and you were demonstrating the  
20 actual quadrates of squares to the Board, you directed  
21 our attention to one that you said appeared to be  
22 unstocked.

23 When you refer to a quadrate on any of  
24 these plot examples as being unstocked, does that mean  
25 that it is devoid of vegetation entirely of all kinds?

1 A. No, it does not. It means it's  
2 devoid of the planted tree. It would have vegetation  
3 of something other than the planted tree. In fact, on  
4 these plots there are quite a variety of species  
5 present.

6 Q. And with respect to plot No. 3 in the  
7 photographs that you have just shown to the Board, what  
8 in your opinion is significant about the conditions  
9 depicted in those materials?

10 A. The significance of plot No. 3, Madam  
11 Chair, is that the objective stocking of 70 per cent in  
12 the silvicultural ground rules specifications in this  
13 case was achieved. It's achievable in intensively site  
14 prepared ground, but even there it is also probably the  
15 maximum but it is practical to consistently achieve.

16 And I go back to what I said earlier, the  
17 reason that that comes about is because of the natural  
18 obstructions in the ground that would prevent precise  
19 spacing of the planted trees.

20 Q. What is your expectation as to how  
21 this plantation will ultimately mature?

22 A. I would expect this plantation to  
23 mature at a very young age relative to ages that we  
24 look at in the normal natural forest here in the  
25 Thunder Bay area.

1 I would estimate that this plot would be  
2 very similar in performance to plot No. 1 at the  
3 Thunder Bay nursery trials. It's on a fairly rich  
4 site, in fact it's classed as site class 1 in the  
5 forest resources inventory. The current growth is  
6 almost identical in height to the height growth as  
7 evident from the branch whirls still visible on the  
8 plantation trees in plot 1 at the nursery.

9 If it is equal to plot 1, and in my  
10 opinion it is, it will probably mature by peaking a  
11 mean annual increment somewhere around an age of 40 to  
12 45 years, maybe younger.

13 Q. And could I ask you to look, if you  
14 would please, at Forests for Tomorrow Interrogatory No.  
15 18 which forms part of the package of interrogatories  
16 filed this morning as Exhibit 1138.

17 Would you outline for the Board what the  
18 nature of the enquiry was, and I should ask you first:  
19 Who was responsible for the preparation of the response  
20 to this interrogatory?

21 A. I was responsible for the  
22 preparation.

23 Q. All right. And to what does the  
24 interrogatory relate?

25 A. The interrogatory related to the



1       plantation in plot 3 and the question was relevant to a  
2       statement made.

3               The statement was that this plantation  
4       will mature with high merchantable volume and will be  
5       similar in appearance to many natural stands. And the  
6       question was asked; on what evidence is this statement  
7       based? I just partially elaborated on some of that  
8       evidence, but I will go back over it for the benefit of  
9       the Board here.

10              It's based on the comparisons with the  
11       stands in plot 1 and we have an additional stand which  
12       I will show later, stand 4, which has some other  
13       similar aspects, except stand 4 is in a natural stand.

14              And the answer here to the interrogatory  
15       compares the natural stand and the very fully stocked  
16       precise plantation stand at six-foot or 1.83 metres to  
17       the operational plantation.

18              And I use the argument that because of  
19       the similarities in stocking the model three plots and  
20       the better spacing within the plantation plot, the plot  
21       No. 3, the absence of excess seedlings - which I will  
22       later show in plot 4 - that would occur in a natural  
23       stand, I conclude that the operational plantation, plot  
24       3, will in fact grow at a fairly rapid rate and  
25       accumulate merchantable volume at a younger age than

1 did the natural plot stand in plot 4.

2 Q. Well, perhaps then you should show us  
3 plot 4.

4 A. This is plot 4 and it's photograph  
5 14. It also is of a black spruce stand, it's a black  
6 spruce upland stand located on the Spruce River Forest  
7 of Abitibi, not in the case study area, it's in the  
8 vicinity of Sauerbrei Lake on a road called the Heaven  
9 Lake Road.

10 It's a mature black spruce fire stand.  
11 The ages that we sampled on the plot vary between 68  
12 years to slightly over 70, so it's approximately a  
13 70-year old stand.

14 It currently has 4,150 black spruce trees  
15 per hectare, it is 74 per cent stocked. So it's about  
16 the same stocking as the plantations but it has almost  
17 twice as many trees.

18 The current merchantable volume in 1989  
19 was 167 cubic metres, that is more than exists in plot  
20 1. It's not quite double the average that we log in  
21 the Spruce River Forest, but plot 1 with the very close  
22 plantation -- six-foot spacing plantation is getting up  
23 into the area of volume of merchantable land per  
24 hectare as this stand which is almost twice its age.

25 I would like to go to some another

1 photograph showing the stand. This is a view of the  
2 stand profile along the Heaven Lake Road. It's  
3 approximately a hundred metres from the exact location  
4 of the plot but the stand has very little overall  
5 variation in it.

6 This photograph illustrates the tendency  
7 toward bunching in natural stands, and I would point  
8 out by the pick-up truck shown in the lower left corner  
9 of the photograph there is a tendency to grouping of  
10 some trees, then there is somewhat of an opening, right  
11 over the cab of the truck there is a single tree, as we  
12 move back over the panel of the truck there is another  
13 group, then a space, then another group and then down  
14 to four groups. It's the variation of the stand that  
15 is natural.

16 That same variation but less of a  
17 tendency to grouping is also apparent in plot 3 which I  
18 described as the operational plantation, the exception  
19 being in that plantation is that there is not the  
20 extreme density, so the grouping is slightly visible,  
21 but not as many trees in the groups.

22 I next have a photograph which is  
23 photograph No. 16 -- the last one was photograph 15.  
24 This is an internal view of the stand showing the  
25 ground cover. This is a black spruce/feather moss

1 upland site. It shows some dead trees that have fallen  
2 and they have been counted in the stocking.

3 My experience in measuring the yield of  
4 black spruce stands from permanent sample plots has  
5 shown me that black spruce is very tolerant of its own  
6 species and in studying permanent sample plots over  
7 20-year periods I found that it does not carry out much  
8 natural thinning until it gets up into the 70 to  
9 80-year age range. There is ingrowth into, even as low  
10 as the one-inch diameter class, right up to that age.  
11 So I feel what we are looking at here is the  
12 beginning of breakup in this natural.

13 There is very little remnant of earlier  
14 downed trees, so it's my judgment that the trees we see  
15 here are the original trees that formed this stand.

16 Q. I am sorry, how old were the trees in  
17 this stand?

18 A. The trees in this stand are between  
19 68 to 70 years.

20 Q. All right. And how old were the  
21 trees in plot No. 3?

22 A. The trees in plot No. 3 were seven  
23 years old.

24 Q. Thank you.

25 A. This is plot No. 18 and it's a view



1 of a stand from beneath.

2 Q. I am sorry?

3 A. That's 17, isn't it?

4 Q. Thank you.

5 A. It's a view of the stand from beneath  
6 looking up at the crown, and it's actually taken from  
7 one of the unstocked quadrates, in fact two unstocked  
8 quadrates. It's taken from the location of somewhere  
9 in this general area. Here we are here, these two are  
10 unstocked quadrates.

11 Q. You are pointing to those --

12 A. No 17.

13 Q. No. 17.

14 A. Yes. I believe there is one small  
15 seedling to the left of No. 17 actually.

16 So that photograph is of the crown above  
17 that unstocked quadrate and it shows the tree crowns  
18 are practically closed and it's probably as closed as  
19 most crowns get at this age. Abrasion from wind action  
20 tends to knock off a lot of the branches and lateral  
21 branch growth pretty well terminates.

22 This is photograph No. 18 and it's a  
23 detail of a forest floor, again very close to that 17,  
24 just near the bottom of the photograph, and it shows a  
25 lack of diversity of plant species. The feather mosses

1 are shown there. There is a few bunch berries, there  
2 are some Maianthemum or -- no more than a half dozen  
3 species appear.

4 This is photograph No. 19 and it is an  
5 aerial shot of the stand, the actual location of the  
6 plot. Some of the dead trees that were shown in the  
7 plot are visible here in the left. They show up with  
8 somewhat red crowns. They appear to be dying from a  
9 root rot which is infecting a group of trees. This is  
10 a fairly normal occurrence in all stands, but it's an  
11 indication that the stand is reaching its peak or has  
12 reached.

13 Q. All right. Before you leave then  
14 plot 4 and the photographs associated with it, what in  
15 your view is significant about the conditions described  
16 in plot No. 4 and in the associated photographs?

17 A. The significant thing about plot No.  
18 4 is that it is very similar to plot 3, but to get the  
19 stocking that we had in 3 we had to have almost twice  
20 as many trees present to get the same stocking.

21 Q. You have got plot 5 up there, Mr.  
22 Squires. Did you want plot 3? Can you see this at all  
23 from your angle? I am getting the impression you  
24 can't.

25 A. Not very well, not very well.

1 Q. Could you take a look at it and put  
2 the plot number up that you like.

3 A. You are asking for the plot itself.

4 Q. All right. I am sorry, could you  
5 tell me again, please, what you regard as being  
6 significant about this plot?

7 A. The significant thing about this plot  
8 is that it has very similar stocking to plot No. 3  
9 which was a plantation -- an operational plantation,  
10 but in order to get that same stocking in a natural  
11 stand there had to be almost twice as many tree  
12 seedlings. In this case we had 4,150 tree seedlings  
13 versus I think it was approximately 22-, 2,300 in the  
14 plantation.

15 The effect of this higher density in the  
16 natural stand is to depress the merchantable volume  
17 that's available. The trees are grouped and within  
18 those groups they tend to compete for the available  
19 growing space and nutrients, and individual trees are  
20 have smaller diameters, they reach merchantable size at  
21 a much later age and the mean annual increments tends  
22 to be lower because of that until a much older age than  
23 in the plantation.

24 They may in fact at some point in time,  
25 at maturity have very similar total merchantable

1 volumes, but the natural stand will get that  
2 merchantable volume later.

3 Q. And then if you could move to plot  
4 No. 5, please. Where is this plot, Mr. Squires?

5 A. This plot No. 5, Madam Chair, is  
6 located on the Spruce River Road or Highway 527 at the  
7 extreme south end or entrance point to the Spruce River  
8 Forest. It's approximately 30 miles north of Thunder  
9 Bay.

10 It's located in a mature upland stand.  
11 It's a mixed wood stand of fire origin. The fire  
12 scarred trees or stumps are still present in the stand.

13 The plot has 1,825 trees of all species  
14 present. The stocking to softwood is 33 per cent with  
15 950 trees per hectare. The stocking to hardwood is 29  
16 per cent with 850 trees per hectare. The combined  
17 stocking of hardwood and softwood is 54 per cent.

18 The merchantable volume of softwood is 93  
19 cubic metres. Again I would point out that's similar  
20 to the average harvested by Abitibi-Price in the Spruce  
21 River Forest. Additionally, it has 137 cubic metres of  
22 hardwood. That is a total of 230 cubic metres of  
23 merchantable fiber per hectare on this plot.

24 Note also the diversity of species: we  
25 have got black spruce, jack pine, balsam fir, white



1       birch and poplar. The dead trees tend to be white  
2       birch which is a natural phenomenon in stands of this  
3       age. The birch begins to dieback.

4                   Q. And what is the age of the trees in  
5       this stand?

6                   A. The trees in this stand are,  
7       according to the FRI, approximately 80 years old, 80 to  
8       85.

9                   Q. 80 to 85?

10          A. Yes.

11                  Q. And what is significant about these  
12       conditions in your view?

13                  A. I would like to show some internal  
14       views of the stand, Ms. Cronk, prior to getting into  
15       the --

16                  Q. That's fine.

17                  A. This is photograph No. 21. The plot  
18       itself was photograph No. 20.

19                  Photograph No. 21 is an internal shot of  
20       the stand showing the rich undergrowth that is present.  
21       There is quite a diversity of undergrowth shrub  
22       species, most predominantly is mount maple. There is  
23       also showing mountain ash, red osier, dogwood, beaked  
24       hazel, so a variety of understorey shrubs. So this  
25       points out the density of that understorey shrub.

1                   This photograph No. 22 is a picture of  
2                   the tree canopy above some unstocked quadrates.  
3                   Generally in the vicinity of the top right of the  
4                   centre point of the plot we are looking up at the  
5                   poplar canopies, the poplar being the blue dots on the  
6                   plot. So over those unstocked quadrates we see that  
7                   the poplar have in fact a closed canopy and there are  
8                   some spruce trees and jack pine trees also visible in  
9                   the canopy.

10                   Plot No. 23 show --

11                   Q. You mean photograph?

12                   A. Photograph, I am sorry, No. 23, shows  
13                   the canopy again. At this location we have a jack pine  
14                   present and there are some spruce trees showing in the  
15                   right side of the photograph The jack pine protrudes up  
16                   to the sky from the lower left corner of the  
17                   photograph, and the top right corner there is poplar,  
18                   and the lower right corner we see a mountain maple or  
19                   Acer spicatum.

20                   Q. How was that photograph taken?

21                   A. By lying on my back on the wet moss.  
22                   This is photograph No. 24. It's an aerial view of the  
23                   plot location showing the canopy. The most prominent  
24                   feature of the canopy here is trembling aspen, although  
25                   in the bottom of the photograph some of the black

1 spruce and jack pine show as well. It was typed in the  
2 FRI as a poplar working group.

3 The significant point that I would like  
4 to make about this plot is that it is a natural mixed  
5 wood situation and natural mixed wood regeneration on  
6 some of the areas that would be left for natural  
7 regeneration in my opinion will look very similar to  
8 this. Situations where we would have approximately 30  
9 to 33 per cent stocking of softwoods and a similar  
10 stocking to hardwoods with a total stocking of  
11 somewhere in the vicinity of 50 per cent, 55 per cent  
12 will mature to this sort of a condition.

13 That's not to say that in this plot there  
14 were not denser conditions at one point in time or that  
15 those same conditions I have just described would be  
16 somewhat different. The tendency would be for the  
17 lower stocking that I have described to move up to this  
18 condition and denser stocking, particularly with poplar  
19 present and probably also with jack pine, would tend to  
20 reduce stocking.

21 So I think we have here a visual image of  
22 a mixed wood stand coming from a wide range of  
23 stocking.

24 Q. You indicated that the stocking to  
25 softwoods in a stand of this kind based on the

1 characteristics of plot 5 was, did you say, 33 per  
2 cent?

3 A. That is right.

4 Q. All right. Even with stocking of  
5 that kind in your opinion does this stand now provide,  
6 or will it in the future yield acceptable merchantable  
7 volumes?

8 A. Very definitely. We are harvesting  
9 stands of this type today. We go after the softwood,  
10 all the species of softwood mentioned and various third  
11 party operators go for the hardwood. So this stand in  
12 effect would be fully utilized.

13 Q. How would you compare then the  
14 desirability of a stand of this kind that is reflected  
15 in plot 5 with the desirability of the kind of stand  
16 depicted in plots 1 or 3, for example?

17 A. I would prefer, from the harvesting  
18 standpoint on some of the richer sites, to go for the  
19 plots that are depicted in plots 1 and 2, but more  
20 particularly for those depicted in plot 3 which I  
21 described as the operational plantation where we would  
22 have similar mixed conditions although not to the same  
23 extent as we have in plot 5.

24 Plot 3 will mature at an earlier age than  
25 even this one here because of the higher grouping



1 effect of the tree seedlings, so there has to be some  
2 competition developing between the trees.

3 Q. Overall then, Mr. Squires, what is  
4 your purpose in demonstrating for the Board the plots  
5 surveyed in this study and the conditions you have  
6 described?

7 A. After all I have said here really we  
8 are down to one line, Madam Chair, the real purpose of  
9 this is to point out that in my professional opinion 40  
10 per cent stocking is quite adequate.

11 Q. And when you refer to 40 per cent  
12 stocking, what are you referring to?

13 A. 40 per cent stocking of four-square  
14 metre quadrates, the standard for minimum stocking,  
15 acceptable minimum stocking in the ground rules of most  
16 FMAs.

17 Q. Thank you very much, Mr. Squires. We  
18 will get the lights back on. Thank you.

19 MS. CRONK: Madam Chair, I was about to  
20 ask Mr. Squires to deal with another aspect of  
21 artificial regeneration. Rather than launching into  
22 that at five to twelve, would the Board prefer to rise  
23 now, or should I begin?

24 MADAM CHAIR: That is a good idea, Ms.  
25 Cronk.

1 MS. CRONK: Thank you.

2 MADAM CHAIR: why don't we break for  
3 lunch now.

4 MS. CRONK: Thank you.

5 MADAM CHAIR: And we will meet back here  
6 at one o'clock.

7 MS. CRONK: Thank you.

8 ---Luncheon recess taken at 11:55 a.m.

9 ---On resuming at 1:00 p.m.

10 MADAM CHAIR: Please be seated.

11 MS. CRONK: Madam Chair, I now have the  
12 two additional copies of the Panel 8 statement of  
13 evidence and I would like to provide them to you now.

14 MADAM CHAIR: Thank you.

15 MS. CRONK: (handed)

16 MADAM CHAIR: Thank you.

17 MS. CRONK: Q. Mr. Squires, a number of  
18 general questions relating to the evidence that you  
19 have given before the Board concerning plots 1 to 5 and  
20 your view of the adequacy of the 40 per cent minimum  
21 stocking standard.

22 First of all, is the stocking approach;  
23 that is, the quadrate method which you've used and  
24 referred to in your review the same stocking approach  
25 used in the FRI?

1 MR. SQUIRES: A. No, it is not.

2 Q. Is this type of approach; that is,  
3 the quadrate stocking approach, usually used with  
4 mature stands to gage stocking?

5 A. No.

6 Q. Why was it done here?

7 A. It was done here purely to illustrate  
8 the stocking in mature or regeneration type stands, but  
9 the two don't relate well.

10 Q. Had you done it another way; that is,  
11 used a different stocking approach for illustration  
12 purposes with respect to the mature stands, could you  
13 have compared the results or related the results to  
14 stocking in juvenile stands?

15 A. No, I could not.

16 Q. And why is that?

17 A. Because they're like mixing apples  
18 and oranges. In the FRI situation or mature situation  
19 you would be talking about a basal area which has no  
20 relationship at all to per cent stocking of the  
21 quadrate type of measurement.

22 Q. And with respect to the mature  
23 stands, I have in mind plots 4 and 5 that you described  
24 to the Board, do you know what the stocking conditions  
25 were in those stands 40 to 30 years ago?

1                   A. No, I do not. There were no  
2 measurements taken to relate them.

3                   Q. Is the information available at all  
4 then as to --

5                   A. No, it is not.

6                   Q. All right. For the purposes of what  
7 you were communicating to the Board or the illustration  
8 that you did for the Board does it matter that you  
9 don't know what those conditions were 30 to 40 years  
10 ago?

11                  A. No, it doesn't matter in the sense  
12 that what I was doing was utilizing the per cent  
13 stocking measure of stocking purely to illustrate a  
14 situation that prevails in regeneration stands and I  
15 was relating it to mature stands, but this was not a  
16 scientific study as such, it was purely to illustrate  
17 the distribution of tree seedlings and position of  
18 trees within a stand.

19                  Q. Thank you. And could I ask you to  
20 refer perhaps just in the text of the Panel 8 statement  
21 of evidence again to plot No. 5, if you would. That's  
22 at page (xxiv) of Appendix B.

23                  A. I have it.

24                  Q. All right. Looking at plot No. 5,  
25 can you indicate for me what the merchantable softwood



1 volume was in that stand, just dealing with the  
2 softwood?

3 A. The merchantable softwood volume  
4 was - I have to look here - 92 cubic metres.

5 Q. All right.

6 MS. SWENARCHUK: Sorry?

7 MS. CRONK: 92 cubic metres.

8 MR. SQUIRES: 92 cubic metres.

9 MS. CRONK: Q. What then is the stocking  
10 referred to in the photograph of plot 5 -- I am sorry,  
11 what then is the merchantable volume referred to in the  
12 photograph of plot 5?

13 MR. SQUIRES: A. The merchantable volume  
14 referred to in the photograph of plot 5 is that of all  
15 of the commercial species combined.

16 Q. And how does -- is that overall or  
17 per hectare?

18 A. It's per hectare.

19 Q. And with respect to the 92 cubic  
20 metres, is that overall or per hectare?

21 A. That is per hectare.

22 Q. And how does that 92 cubic metres  
23 compare to the average softwood volume per hectare  
24 harvested today in mature and overmature forests on  
25 your limits?

1                   A. It's roughly the same as the average  
2 softwood volume we harvested -- in stands we harvest on  
3 the Spruce River Forest today. Somewhere between 85 to  
4 95, it varies from year to year.

5                   Q. Thank you very much, Mr. Squires.  
6 Could you put back up, if you would, please, your  
7 overhead of the figure indicating the various renewal  
8 alternatives available to industry timber managers?

9                   A. I'm not sure I can find that, Ms.  
10 Cronk. May I be excused to get it?

11                  Q. Yes. Thank you very much.

12                  A. You are referring to Figure 3?

13                  Q. Yes. That's Figure 3 on page 55.  
14 Thank you, Mr. Squires.

15                  Q. Just looking then at the regeneration  
16 component of renewal as indicated on Figure 3, could  
17 you move next to the direct seeding alternative and  
18 could you describe for the Board, please, with respect  
19 to it what methods are available and utilized by the  
20 Industry with respect to direct seeding?

21                  A. The methods the Industry uses in  
22 direct seeding would include aerial broadcast seeding,  
23 hand or what we call spot seeding, seeding in  
24 conjunction with site preparation and seeding under  
25 shelter cones.

1                   In all of those methods the success would  
2                   depend on a range of factors: The availability of  
3                   natural or created favourable seedbeds, the prevailing  
4                   weather conditions both during and after seeding, the  
5                   amount of seed that gets lost to predators and the  
6                   presence of a consistent soil moisture near the surface  
7                   of the soil.

8                   Seeding does have a much higher risk of  
9                   poor survival than does planting, especially where  
10                  there is severe competition from vegetation, other  
11                  vegetation.

12                 Q. Are there in your view, however,  
13                 advantages to seeding as a form of regeneration option  
14                 available to Industry managers?

15                 A. Most definitely, yes. There are  
16                 several advantages to seeding. I would mention the  
17                 lower cost of seeding as a -- relative to planting.

18                 Seeding also requires less labour, there  
19                 are fewer problems in the form of handling and storage  
20                 problems and those problems that do exist are simpler  
21                 to solve, the advantage of a wider range of sites,  
22                 flexibility of site for the application of seeding.  
23                 Where planting is inappropriate sometimes, seeding can  
24                 be appropriate.

25                 Topography has some impact but seeding

1 can often be applied on topography or planted in  
2 planted zones practically. Access for seeding is  
3 simpler and obstructions tend to have less impact on  
4 seeding. There is more flexibility relative to timing  
5 of the application of seeding relative to the planting,  
6 more flexibility relative to climatic conditions where  
7 it is possible to seed in winter whereas it wouldn't be  
8 too wise to plant in winter, it can be used during a  
9 wide range of increment weather conditions and over a  
10 longer time period than planting could.

11 However, in all those periods there is a  
12 risk of drought and in summer to early fall there is a  
13 risk that germinating seedlings will be killed by frost  
14 before they have an opportunity to properly harden up  
15 for winter.

16 Q. Are there, taking that into account  
17 then, certain disadvantages from the Industry's  
18 perspective in using direct seeding methods?

19 A. Yes, there are. I would point out  
20 the poor survival potential for seeding if there is not  
21 very careful attention paid to the site, weather  
22 conditions, moisture conditions, all of those  
23 conditions that I have mentioned.

24 There is also a need to pay attention to  
25 the potential for loss to rodents, predators. However,



1 I would point out that on some sites seeding is  
2 preferred because of topography, soil, access, cost  
3 savings and labour availability over planting.

4 In case study 4A that has been described  
5 by Canadian Pacific Forest Products in Panel 4, site  
6 preparation was combined with direct seeding to augment  
7 natural seeding with the preferred regeneration method.

8 Q. Can you for the assistance of the  
9 Board, Mr. Squires, compare planting and direct seeding  
10 in terms of their respective advantages and  
11 disadvantages as regeneration techniques, in general  
12 terms?

13 A. Yes. Madam Chair, Mr. Martel,  
14 planting is more often effective than direct seeding  
15 because it allows for immediate restocking and, as I  
16 mentioned earlier, it captures the benefits of the site  
17 preparation at an earlier date. It permits more  
18 genetic improvement in the future crop, it offers more  
19 control over stand density and crop species.

20 On the other hand, direct seeding affords  
21 cost advantages and it permits regeneration of large  
22 less productive sites or unusual terrain that is  
23 physically difficult to plant but otherwise favourable.  
24 The disadvantages already mentioned requires the  
25 reliable percipitation - I am talking about seeding

1 here - reliable soil surface moisture and necessity  
2 that we reduce the loss of seeds to predators.

3 Q. What about direct seeding versus  
4 natural seeding? Can you compare the relative  
5 advantages and disadvantages of those techniques?

6 A. Yes. When there is a planting stock  
7 shortage as an example, we will often use seeding out  
8 of necessity. Seed supply is often limited on the site  
9 and we would go to planting, if the silvics of the  
10 desired species are not conducive to natural seeding  
11 regeneration we may go to seeding for some other  
12 treatment.

13 Q. Looking at the planting and the  
14 direct natural seeding options then, dealing first with  
15 planting, what are the criteria used by Industry  
16 managers, again as a general matter, in assigning  
17 planting priorities?

18 A. I would look at a number of factors  
19 in assigning planting priorities rather than seeding.  
20 Planting allows for immediate restocking, as I say,  
21 capturing the benefits of the site prep, the genetic  
22 improvement I mentioned, more control over stand  
23 density and crop species.

24 Q. There was an interrogatory that  
25 related in part to this and I would ask you to go to

1 it, if you would now, Mr. Squires. It is Ontario  
2 Ministry of Natural Resources interrogatory No. 1 on  
3 this panel. Do you have a copy of that available?

4 A. Yes, I do. Ministry of Natural  
5 Resources interrogatory No. 1?

6 Q. Yes. A question was put in this  
7 interrogatory relating to the criteria used to assign  
8 planting priorities and then an answer in respect of  
9 that question is provided in paragraph (a).

10 Could you take a moment and review it and  
11 indicate for me, first, whether you authored the  
12 response or not or participated in the --

13 A. I was one of the authors, yes.

14 Q. Do you agree with the criteria set  
15 out in that paragraph as being those criteria looked to  
16 by Industry timber managers in assigning planting  
17 priority?

18 A. I agree they include some of the  
19 criteria we would use, yes.

20 Q. Are there any additional ones that  
21 you would wish to add now?

22 A. At the moment none come to mind.

23 Q. All right. How do they compare to  
24 the criteria looked to by Industry managers in  
25 assigning seeding priorities? Could you provide the

1 Board with a similar list on seeding criteria?

2 A. They are very similar. We would look  
3 to the probability of natural regeneration to desirable  
4 species, if the probability is poor we would look to  
5 seeding. We would look at the accessibility for site  
6 preparation, whether accessibility is available,  
7 the treatability for site preparation and seeding, soil  
8 conditions, topography will all be examined.

9 The soil characteristics, particularly  
10 the coarseness of the soil, you would use seeding on  
11 the coarser soils running through the more fertile  
12 soils which could level off competition and seeding  
13 would be risker.

14 We would look at the past experience on  
15 similar sites relative to our operations. If the  
16 experience is good, we would proceed with seeding; the  
17 availability of seed and the species availability and  
18 the quantity and viability of that seed would be a  
19 critical factor; the cost effectiveness of the  
20 available options; the availability of adequate  
21 funding, Madam Chair, would be very important and the  
22 availability of planters in this case would not be as  
23 important for the availability of labour, so it would  
24 be a low labour exercise.

25 Q. Thank you, Mr. Squires. Dealing then



1 with the next alternative available to timber managers  
2 for regeneration; that is, the natural component, Mr.  
3 Gemmell, I understand that your evidence is directed to  
4 it?

5 MR. GEMMELL: A. That's correct.

6 Q. Would you outline for the Board,  
7 please, again from an Industry perspective as to what  
8 the realistic options for natural regeneration?

9 A. I can. Madam Chair, in some  
10 circumstances the most appropriate regeneration method  
11 available is natural regeneration.

12 In the Ministry's statement of evidence  
13 on renewal, Panel 11, stands regenerated by natural  
14 means developed into which specific seeding or planting  
15 treatments are not carried out. There are a number of  
16 natural regeneration methods now in use and these are  
17 natural seeding, regeneration from advanced growth and  
18 regeneration from coppice methods.

19 The potential success of natural  
20 regeneration methods depends largely on the species  
21 involved, the site, stand and terrain conditions.  
22 There are a number of advantages and disadvantages to  
23 natural regeneration. The advantages include the  
24 encouragement of natural regeneration where there is  
25 poor accessibility, encouragement of natural

1 regeneration of sites located long distances from the  
2 mill where planting investments may not be warranted,  
3 the encouragement of regeneration on sites having lower  
4 productivity, again planting investments may not be  
5 warranted; the encouragement of the natural  
6 regeneration on suitable sites where there is a good  
7 chance of success and there are also these lower  
8 establishment costs and the natural regeneration also  
9 encourages the perpetuation of local genetic material.

10 Q. Can I stop you there just for a  
11 moment, Mr. Gemmell. In your part of the area of the  
12 undertaking in the Clay Belt, when you use the term  
13 lower productivity what do you have in mind?

14 A. We speak of the lower productivity as  
15 being the lower sites which overall, in comparison to  
16 an upland site type, the lower sites, would not produce  
17 as much mean annual increment. If there is the same  
18 species and the same amount of the species in the low  
19 sites -- the low sites in the Clay Belt represent the  
20 average of the wood supply for the Clay Belt; in other  
21 words, the lower sites produce most of the -- or at  
22 least 50 per cent of the merchantable wood, but they  
23 aren't necessarily highly productive as compared to the  
24 uplands sites.

25 Q. Thank you. You have indicated what

1 you perceive the advantages to be of natural  
2 regeneration, are there as well disadvantages with  
3 respect to natural regeneration techniques insofar as  
4 the Industry is concerned?

5 A. Yes, there are. The disadvantages  
6 include the silvics of certain species which may not be  
7 suited to obtain adequate levels of natural  
8 regeneration. The results of natural regeneration are  
9 often predictable, it can being effected by such  
10 factors as poor seed crops, unfavourable weather and  
11 heavy competition.

12 There is limited control and in many  
13 cases no control in the density of the stock of natural  
14 regeneration, there is an inability to alter rotation  
15 ages in natural regeneration, natural regeneration  
16 often requires a substantial regeneration period.

17 In many situations natural regeneration  
18 techniques have a high risk for survival and natural  
19 regeneration can result in genetic quality loss where  
20 the trees are left in an uncut state.

21 Q. Do you personally, Mr. Gemmell, have  
22 experience in the area of the undertaking with both  
23 artificial and natural regeneration techniques in a  
24 planning and implementation sense?

25 A. Yes, that's correct. In our case

1 study the illustration is comparing the artificial  
2 method to the natural methods.

3 Q. Can you, based on that experience,  
4 compare in general terms for the Board artificial and  
5 natural methods in terms specifically of the likelihood  
6 of success of treatment?

7 A. Well, a good example is in the low  
8 black spruce sites. The success possibilities for  
9 black spruce in the natural state are very high. There  
10 is a great deal of advanced growth present in the stand  
11 at the time of harvest and there is the opportunity for  
12 seeding in. So that's a very high successful method.

13 If you took the black spruce and applied  
14 a seeding technique to the upland clay sites where  
15 there is heavy competition on the rich clay soils, then  
16 there is a high risk of failure. So, in other words,  
17 in that comparison it is very good on certain sites and  
18 it is a high risk on other sites.

19 Q. Thank you. Now, there were a number  
20 of interrogatories directed to the panel specifically  
21 dealing with natural regeneration and I would ask that  
22 you look first, if you would, please, at the Ministry  
23 of the Environment interrogatory No. 5.

24 A. I have that.

25 MS. CRONK: The second last page in the



1 bundle, Madam Chair, that was marked as Exhibit 1138.

2 Q. And can you indicate for the Board,  
3 Mr. Gemmell, the nature of the information provided in  
4 this interrogatory?

5 MR. GEMMELL: A. I can. One of the  
6 disad -- the question is:

7 "One of the disadvantages to natural  
8 regeneration methods identified in the  
9 statement of evidence is that the silvics  
10 of certain species are not suited to  
11 natural regeneration. Please list the  
12 tree species whose silvics are not suited  
13 to natural regeneration."

14 The answer we produced is that all tree  
15 species are capable of regenerating naturally and that  
16 is evidenced by their historical presence.

17 However, certain species are relatively  
18 less well suited to natural regeneration and generally  
19 require assistance from man to produce viable  
20 commercial crops and these species include jack pine,  
21 red pine, white spruce, tamarack and on certain sites  
22 black spruce and white pine.

23 Q. Could you go next, if you would,  
24 please, to interrogatory No. 3 from the Ministry of  
25 Natural Resources and, again, outline for the Board the

1 nature of the evidence provided through this  
2 interrogatory?

3 A. Yes. The question is:

4 "A statement is made that in many  
5 instances FMA holders are committed to  
6 using low-cost regeneration methods where  
7 appropriate, even though low-cost methods  
8 are often high failure risk methods. Do  
9 low-cost methods have a high failure risk  
10 in all situations?

11 And my reply to that is that low-cost  
12 methods are not in all situations high failure risk  
13 methods. The degree of failure risk again depends upon  
14 a number of factors such as sites and weather  
15 conditions and the presence or absence of a number of  
16 other conditions such as competition for survival and  
17 growth.

18 And an example we gave because for jack  
19 pine area seeding which is an effective low-cost  
20 regeneration technique which is not high failure risk  
21 when employed in certain sites, however, if it is used  
22 on sites which are known to have severe competition or  
23 a drought, then it becomes a high risk.

24 And I have already given an example of  
25 black spruce where it has -- it's very successful on

1 the low sites but becomes a high risk factor on the  
2 upland productive clay sites.

3 Q. Is there, Mr. Gemmell, in your  
4 experience and based on your knowledge of renewal  
5 activities in the area of the undertaking, generally  
6 speaking, a preference by the Industry for one form of  
7 regeneration method over another; by that I mean  
8 option, artificial or natural?

9 A. No, the decisions are made based on  
10 the species and site and other circumstances. So that  
11 the decisions are chosen according to what we feel is  
12 the proper method.

13 Q. What then in the end is your view as  
14 to the appropriateness of natural regeneration as a  
15 regeneration alternative available to timber managers?

16 A. I think the natural method - and I go  
17 back to our area - is a very important part of our  
18 program and it especially applies to the low black  
19 spruce sites.

20 Q. Thank you, Mr. Gemmell. Panel, I  
21 would like you to turn now, if you would please, to the  
22 case studies which have been described in Panel 4 to  
23 the Board in an overview way, and I am going to invite  
24 each of you in turn to describe in greater detail to  
25 the Board your own involvement with and the nature of

1 the renewal activities in those case studies.

2 And could I perhaps start at this end of  
3 the panel, Mr. Ferguson, with yourself. You, as I  
4 understand it, will be dealing with the renewal  
5 activities in case study 4A, that being the Canadian  
6 Pacific case study.

7 MR. FERGUSON: A. Yes, that's correct.

8 Q. And were you personally involved, Mr.  
9 Ferguson, in the planning and implementation of the  
10 renewal activities described in that case study?

11 A. Yes, I was. I have been involved  
12 with the jack pine case study 4A since prior to the  
13 area being cut.

14 Q. And how long have you been involved  
15 generally in renewal activities in the course of your  
16 career?

17 A. I have been involved in renewal  
18 activities since the signature of the English river  
19 Forest FMA in 1980.

20 Q. And was all or part of that time  
21 spent in the area of the undertaking since 1980?

22 A. All within the area of the  
23 undertaking and all on the English River Forest.

24 Q. All right. Thank you, Mr. Ferguson.  
25 Then, would you review for the Board please, first



1 remind us of what the site type conditions are and  
2 where your case study is located?

3 A. Certainly. In the overview, as Ms.  
4 Cronk has indicated, the Canadian Pacific Forest  
5 Products case study area of the jack pine upland site  
6 type has already been presented by Mr. Roll who also  
7 spoke to you concerning the harvest considerations of  
8 the case study. Mr. Zorn has already spoken on the  
9 access consideration and I will now speak to the  
10 renewal section of that.

11 Firstly, if I might perhaps, I should  
12 just remind the Board of the location of the case study  
13 in question. The Canadian Pacific Forest Products case  
14 study representing the jack pine upland site type is  
15 located within the English River Forest in northwestern  
16 Ontario, actually the western extremity of the English  
17 River Forest. This falls within the Ignace District of  
18 the Ministry of Natural Resources northwest region,  
19 approximately 50 miles each way to Dryden and to  
20 Ignace.

21 Q. And as the Board has heard in  
22 evidence now from Mr. Roll, the cover type involved in  
23 this case study of course is the jack pine upland. Can  
24 you help us as to the conditions in which that site  
25 type or cover type occurs?

1                   A. Yes, certainly. The jack pine upland  
2 site type tends to occur in large, relatively pure  
3 even-aged stands on well-drained soils, however, jack  
4 pine also does well on fresh sites in mixture with  
5 spruce, aspen and this type occurs extensively  
6 throughout the area of the undertaking. This  
7 particular case study is 121 hectares in size and  
8 consists of a single block.

9                   Q. When was renewal carried out on this  
10 case study?

11                  A. The renewal of this case study was  
12 conducted in 1982 following the harvest in 1981.

13                  Q. And what were the renewal options  
14 first considered?

15                  A. There were basically renewal options  
16 considered consistent with the approved ground rules in  
17 place at the time, and perhaps I could illustrate those  
18 by way of an overhead.

19                  The three renewal options which were  
20 available consistent with the ground rules as I have  
21 indicated would be acceptable on the case study 4A  
22 were: Site preparation for natural seeding, site  
23 preparation followed by direct seeding, and site  
24 preparation followed by planting.

25                  Each of these alternatives was

1 considered. First, the site preparation for natural  
2 seeding. It appeared to be worthy of considerable  
3 consideration. Many similar sites in the immediate  
4 vicinity had in the past received such treatment,  
5 however, although regeneration had occurred on the  
6 sites in the vicinity, stocking was often less than  
7 optimum.

8 The site preparation followed by direct  
9 seeding option appeared to be a better alternative.  
10 Direct seeding could be expected to fill in gaps left  
11 in the natural seeded area. There were several good  
12 examples of results that had been achieved using this  
13 method of renewal.

14 A site preparation with planting option  
15 was also considered, however, planting did not appear  
16 to be necessary on this particular site. It was  
17 anticipated that good results could be achieved by  
18 seeding with some ingrowth from natural, and that the  
19 extra cost associated with planting could not be  
20 justified.

21 Also of consideration at the particular  
22 time back in 1982, there was a very limited amount of  
23 planting stock available for use on the English River  
24 Forest and the stock that was available could be much  
25 better utilized on other sites which were more prone to

1 competition.

2 Therefore, after re-evaluating the  
3 renewal alternatives, the option of site preparation  
4 and seeding was the alternative that was selected.

5 Q. When it came to the issue of site  
6 preparation, what equipment alternatives were available  
7 or what options did you have with respect to site  
8 preparation?

9 A. In 1982 within CP Forest Products we  
10 had basically two types of site preparation available  
11 in 1982: Those were the conventional type equipment, I  
12 suppose you could call it the heavy barrels and chains  
13 which were pulled by bulldozers, and the second option  
14 was the Bracke scarifier which was pulled by a wheeled  
15 skidder.

16 In 1982 the Bracke was considered the  
17 state-of-the-art machine. It had been extensively used  
18 by the Ministry of Natural Resources in the immediate  
19 vicinity for several years and appeared to have  
20 considerable potential.

21 The site preparation conditions on the  
22 case study area were not extremely difficult in my  
23 assessment. The duff layers were relatively thin, the  
24 slash was well dispersed, therefore, the heavy site  
25 preparation which would be provided by tractors and the



1 barrels and chains did not appear to be required. A  
2 later site preparation provided by the Bracke scarifier  
3 was expected to be sufficient and more economical and  
4 was, therefore, selected.

5 The ability of the Bracke to seed while  
6 site preparing was also seen to be an advantage.  
7 Simultaneous seeding will provide again a one-growing  
8 season over either natural regeneration, natural  
9 seeding, whereby cones would have to open before the  
10 seed would become available, and would also gain a  
11 season over aerial application of seed, in that aerial  
12 seeding is normally not conducted until winterfall in  
13 site preparation. So in fact, one growing season is  
14 lost through this method.

15 Other advantages of simultaneous seeding  
16 were that saving any amount of seeding required as  
17 compared to aerial application was expected, as well as  
18 a cost saving, in that because the seeding was done  
19 simultaneously with the site preparation, there was  
20 virtually no extra cost incurred for the seeding.

21 It was also expected that some control of  
22 spacing might be achieved through the Bracke seeding.  
23 Therefore this, as I mentioned the Bracke with  
24 simultaneous seeding was the option selected and  
25 implemented in this case study area.

1 Q. Is there, in your case study, Mr.  
2 Ferguson, a description of the Bracke equipment that  
3 was used on the case study area?

4 A. Yes, there is. The site presentation  
5 and seeding on the case study was done using two  
6 Brackes pulled by Timberjack-380 skidders and in  
7 Appendix 6 of the case study document at page 76 there  
8 is a description of the Bracke patch scarifier.

9 Q. Well, can you describe to the Board,  
10 if you would please, what was actually done to carry  
11 out the seeding?

12 A. Yes, I could, and perhaps just it  
13 might be of interest at this time as well, I have a  
14 couple of photos of the Bracke which may just refresh  
15 the Board's memory as to what exactly I am talking  
16 about it.

17 MS. CRONK: I don't know if the Board has  
18 available to it the case study photographs that were  
19 distributed during Panel 4.

20 Q. But perhaps, Mr. Ferguson, you could  
21 identify what photograph number it is because the Board  
22 has original photographs from the case studies.

23 MR. FERGUSON: A. I'll just get all the  
24 wiring here without tipping the table.

25 Yes. This first photograph is photo 7.1

1 from the Canadian Pacific case study 4A which is a  
2 photo of the Bracke scarifier. You can see at the  
3 right-hand side of the slide the Timberjack-380 skidder  
4 which is used to pull the Bracke on the left-hand side  
5 of the slide.

6 And going on to photo 7.2, a photo taken  
7 from the extreme rear of the Bracke, which in effect  
8 shows the mattock wheels which do the actual site  
9 preparation. You can see the tines at the bottom  
10 right-hand corner of the photo, which in effect are  
11 producing a Bracke patch. Immediately above the patch  
12 there is a rather square looking box on the rear of the  
13 machine, that is in fact the location of the seeding  
14 device within the Bracke scarifier.

15 Q. I am sorry, where specifically are  
16 you referring to in the photo?

17 A. Okay. Yes, right at the extreme rear  
18 here, the square box is the location of the seeding  
19 mechanism.

20 Q. On the right-hand side of the  
21 photograph in the middle of the photograph?

22 A. Yes, I guess it's in the middle. It  
23 actually looks closer to the right from here, but it  
24 must be approximately in the middle.

25 As I mentioned, two Bracke scarifiers

1        were used on this particular project and these are the  
2        standard two-row Bracke which were set at a two-metre  
3        spacing. The seeders at the rear of the machine, as I  
4        have indicated, were set to drop 6 to 8 seeds per drop  
5        on the forward slope of the patch, and the location of  
6        the seed drop would be approximately here, right at  
7        the -- on the site prepared area just at the edge of  
8        where the tines are present there.

9                    Q. I am not sure that that laser pointer  
10       is working, Mr. Ferguson. Oh there. Thank you very  
11       much. The bottom of the photograph in the foreground?

12                   A. Right, it seems to be cutting out  
13       here.

14                   Q. How did the operators go about  
15       actually measuring the seed? What was involved in  
16       actually placing the seed on to the site?

17                   A. The seed was in fact measured at the  
18       start and end of each shift and the amount of seed  
19       recorded. I believe I have a slide -- yes, I have a  
20       slide here, that being No. 7.3. This is actually the  
21       supervisor on the particular project not in fact  
22       measuring the seed but checking the seed at this  
23       particular time.

24                   As I mentioned, the seed is measured at  
25       the start and end of the shift. The hoppers were



1 emptied and measured with a graduated cylinder. This  
2 provided us with a record of the amount of seed that  
3 was actually used. And the major reason for the  
4 measurement of the seed was to verify that the seeders  
5 were working consistently.

6 In addition to the measurement at the  
7 beginning and at the end of the shift, the operators  
8 were required to inspect the seeders to ensure that  
9 they were working properly at the start of each shift  
10 and periodically throughout the shift.

11 Here I have photo 7.4 which in fact shows  
12 a picture of the operator checking the seeder during  
13 the shift itself.

14 Q. How, if at all, is the seeding  
15 function of the Bracke itself checked?

16 A. The seeding function is checked  
17 through a number of procedures. I think -- I don't  
18 know that it's worthwhile to go into great detail on  
19 those, however, they are provided in Appendix 8 of the  
20 case study document at page 82.

21 Q. Is that part of the responsibility of  
22 those carrying out the seeding?

23 A. Yes, that's correct.

24 Q. And how is the site preparation  
25 seeding then actually carried out? What do the company

1 personnel do?

2 A. The site preparation and seeding was  
3 conducted on a two-shift basis. The shifts were run  
4 back to back, by that I mean one start/one stop, there  
5 is no break inbetween. That was done in order to  
6 maximize work during available daylight hours.

7 The operators were thoroughly briefed  
8 prior to beginning the site preparation work. The  
9 operators did come from our regular workforce, skidder  
10 operators who produced wood through the winter months,  
11 site preparation in the summer. As I say, these  
12 operators were thoroughly briefed prior to beginning  
13 site preparation and, on a daily basis, received  
14 instruction from their supervisor.

15 An example of some of the instruction  
16 that the operators did receive prior to beginning the  
17 site preparation work is contained in Appendix 7 of the  
18 case study document at page 78, that being the basic  
19 work standards which were reviewed with the operators  
20 of scarification equipment. As I say, that was done to  
21 any operator beginning this type of work.

22 Q. And are the materials in Appendix 7  
23 related to the seeding or to the site preparation  
24 procedures, or both?

25 A. Both.

1 Q. Thank you.

2 A. The two machines involved in the site  
3 preparation work together in tandem circling an area of  
4 cut-over, or a block as we referred to it. This is  
5 done under the direction of their supervisor.

6 As much as possible natural boundaries  
7 were used to confine the operation. Those natural  
8 boundaries mean such thing as the edge of the cut or  
9 roads. In certain instances it was necessary for the  
10 supervisor to establish some ribbon lines to control  
11 the operation as well.

12 The roads which were no longer required  
13 were site prepared and seeded and roads that were  
14 expected to have future use were site prepared up to  
15 the edge of the ditch line, by that I mean the travel  
16 surface of the road itself was not site prepared and  
17 seeded, however, the road right-of-way was site  
18 prepared and seeded.

19 Q. Was any effort made, Mr. Ferguson, to  
20 monitor the area that was actually being treated while  
21 these procedures were being carried out?

22 A. Yes. There were a number of aspects  
23 which could be considered associated with monitoring.  
24 Firstly, on a daily basis there was a supervisor on  
25 site who kept watch over the project to ensure that as

1 much of the area as possible was treated and to a  
2 satisfactory standard.

3 This was done by mapping on supplementary  
4 aerial photographs, that being photographs which showed  
5 the cut-over area, the area of the case study project  
6 itself. As well, the supervisor on the job was  
7 required daily to measure sample plots.

8 And if I could point you to Appendix 9 at  
9 page 88 of the case study document, there is an outline  
10 of the sample plot procedures associated with site  
11 preparation.

12 The sample plots which were measured on  
13 the case study area and in fact on all the site  
14 preparation which was underway at that time were  
15 randomly distributed and measured for such things as  
16 quality and coverage of the site preparation.

17 The sample plot was measured in essence  
18 for three particular aspects, the first being the  
19 patches per hectare, that being the number of  
20 successful patches within a sample plot; the second  
21 thing that was measured was the coverage or the per  
22 cent of the treatable area covered at the desired  
23 spacing; and the third aspect which was measured was  
24 the mineral soil exposure, which we commonly refer to  
25 as MSE, and that is expressed as a per cent of the plot



1 which was exposed to mineral soil.

2 The plot was a circular-sized plot,  
3 circular plot with a radius of 3.99 meters which  
4 results in a plot of 50 square metres or 1/200th of an  
5 hectare.

6 Q. If I can just stop you there, Mr.  
7 Ferguson. You told us that in Appendix 9 you have  
8 included materials relating to sample plot procedures?

9 A. That's correct.

10 Q. Have you included in the materials to  
11 this case study - I don't suggest you should go to it  
12 unless you wish to - but have you included in this case  
13 study materials relating to the instructions provided  
14 to the seeders?

15 A. Yes, they are in there as well. I  
16 forget the actual appendix, but -- yes, Appendix 8 on  
17 page 82 refers to the operators seed monitoring  
18 procedures and Bracke patch scarifier.

19 Q. And do those involved in carrying out  
20 the seeding receive all of these materials by way of  
21 instructions from the company?

22 A. Yes, that's correct.

23 Q. What reporting, if any, is then done  
24 following the seeding effort to ascertain whether the  
25 procedures have been properly followed?

1                   A. Reporting was done on a weekly basis.  
2           The supervisor of the site preparation completes weekly  
3           what we call a weekly progress report. This included  
4           information such as firstly, a map of the area which  
5           was treated, a summary of the total area, that being  
6           the number of acres which were in fact treated in a  
7           particular week, the productivity achieved by the site  
8           preparation equipment, summary of the cost, and a  
9           summary of all sample plots.

10                   And if I could again refer you to the  
11           appendices, Appendix 10 on page 103 of the case study,  
12           there is an example of the weekly progress report  
13           associated with site preparation.

14                   Q. And to whom is the report directed,  
15           who actually gets this?

16                   A. This report was forwarded to the unit  
17           superintendent who had overall responsibility for the  
18           site preparation as well as all other camp activities  
19           and as well a copy of the report was forwarded to the  
20           divisional regeneration co-ordinator for his review.

21                   And I might point out, in the case study  
22           area the site preparation was completed during the  
23           weeks ending June 15th, 1982 and the week ending June  
24           22nd, 1982. The sample plots associated with this case  
25           study area indicated 2,267 patches per hectare at a

1 coverage of 104 per cent and a mineral soil exposure of  
2 9.41 per cent.

3 The indication of these results would  
4 point that the desired result -- desired standards of  
5 the site preparation had been achieved.

6 Q. Overall were there any assessments  
7 conducted by the company that you are in a position to  
8 describe to the Board after the site preparation and  
9 seeding activities to determine how the area was  
10 progressing?

11 A. Yes. In addition to this ongoing  
12 visual checks of the area, in 1984 there was -- had  
13 been two years after site preparation, a stocking  
14 assessment was conducted. It was representing our  
15 first somewhat formal check to see if the site  
16 preparation and seeding had been at all effective.

17 And again at Appendix 11, page 111 in the  
18 case study document --

19 Q. Sorry, what page?

20 A. 111. Appendix 11, there is the  
21 seeding assessment instructions and this would outline  
22 the method whereby the second-year stocking survey was  
23 conducted.

24 Q. All right. Could you go to Appendix  
25 11 for a moment please, Mr. Ferguson, page 111. And

1 dealing with the seeding assessment documents and the  
2 forms relating generally, I suppose -- do all of these  
3 documents of this appendix relate to the seeding  
4 assessments?

5 A. Yes, that's correct.

6 Q. All right. And who is it that is to  
7 follow the procedure set out in these documentation?

8 A. These procedures would be -- or the  
9 instructions within these procedures were forwarded to  
10 all members of the Canadian Pacific Forest Products who  
11 were involved in the seeding assessment activity.

12 And I might add that at the time that  
13 these surveys were conducted on the English River  
14 Forest all qualified employees of the Canadian Pacific  
15 Forestry Department were involved in the seeding  
16 assessment activities.

17 This involved people at the camp, it  
18 involved people from the divisional office, and it  
19 involved people from our head office in Thunder Bay,  
20 that being right from the forestry office technicians  
21 through to the manager of forestry operations who did  
22 in fact go out and conduct seeding assessments himself.

23 I might also add that the second-year  
24 surveys were not a requirement of the forest management  
25 agreement, they were something which was implemented by



1 the company primarily to help develop an understanding  
2 of the effectiveness of our renewal efforts.

3 I guess the thinking behind this was that  
4 it was felt that such surveys going out to identify  
5 areas where regeneration had been less than successful  
6 and where possibly retreatments might be required prior  
7 to the formal fifth-year stocking survey, they might  
8 help to identify areas where competition was or was  
9 likely to become a problem; more importantly, the  
10 second-year surveys would help to show trends and  
11 patterns in regeneration over time.

12 The understanding of results and trends  
13 would allow us to modify our renewal prescriptions, and  
14 by knowing what has occurred on the site, the forester  
15 might be better able to describe the best alternative  
16 on a similar site and it was thought by involving the  
17 entire forestry department that everyone would be kept  
18 familiar with the renewal activities and efforts.

19 And we had an annual get-together and  
20 review discussion of the results by all who were  
21 associated with the seeding assessments. This helped  
22 to ensure that the information which we gathered on a  
23 yearly basis was shared.

24 Q. What were the actual results of the  
25 1984 stocking assessment carried out by the company?

1                   A. Okay. Perhaps the best way to  
2 illustrate that would be by way of an overhead.

3                   Q. Are the results of the second-year  
4 stocking assessment contained in the case study, Mr.  
5 Ferguson?

6                   A. Yes, they are in the case study at  
7 page 42, I believe.

8                   Q. And what did the survey indicate?

9                   A. Okay. The survey, as indicated on  
10 the overhead, present the results of the stocking  
11 survey which was conducted on the case study area in  
12 1984, two years after the renewal effort had taken  
13 place, and if I could just take you through these step  
14 by step here.

15                   Firstly, I would point out that we did  
16 try to make an assessment at the time whether the  
17 stocking was in fact on the site prepared area or off  
18 the site prepared area to try and have as good a  
19 measure to see if our site prep had been in fact  
20 effective.

21                   So the first figure you see there is the  
22 jack pine on the patches. The patches produced by the  
23 Bracke scarifier indicated that 5 per cent of the  
24 plots - and these are the same size of plots which Mr.  
25 Squires has previously described, those being plots two

1 metres square - and the five per cent on patches  
2 indicates that 5 per cent of the plots had a seedling  
3 on the plot that was within the site prepared patch.

4 This immediately struck us as being  
5 rather low and we considered a number of possible  
6 reasons why this might be the case.

7 Firstly, one consideration may have been  
8 that because the seed was falling on very fresh site  
9 preparation with unstable soil conditions, tendency to  
10 slump particularly during heavy rainfall. It was felt  
11 that the seed which had fallen may have become buried  
12 too deeply in the soil and the germination of the seed  
13 had been either prohibited or delayed.

14 The second factor which was considered  
15 was that perhaps high winds during site preparation may  
16 have blown seed off the site prepared patch. As I say,  
17 that could have been the result of wind, it could have  
18 been the result of the bouncing of the Bracke  
19 scarifiers moved across the cut-over.

20 It was also considered that following  
21 germination of the seed may have resulted in  
22 dessication of the seed and seedling mortality. We  
23 also considered the possibility of birds or rodents  
24 which may have eaten the seed.

25 The second figure indicates jack pine off

1 patches at 27 per cent stocking. This would indicate  
2 that the area between the patches is 27 per cent  
3 stocked and this is as a result of natural regeneration  
4 obtained by the increased rate and distribution of  
5 slash during the site preparation.

6 There is also a possibility that some of  
7 this may be due to seed which did not in fact fall  
8 directly on the Bracke site prepared patch, but was  
9 blown off to the side and germinated there.

10 We indicate two per cent stocking of  
11 black spruce which occurred off the patches. This did  
12 not come as a great surprise to us. We did anticipate  
13 we would get some natural black spruce regeneration on  
14 the site. This may have been from spruce seed  
15 contained within the slash or it is more likely from  
16 the result of seed carried in the wind from standing  
17 spruce seed trees on the periphery of the case study  
18 block. Natural spruce seedlings can be expected to  
19 fill in the gaps over an extended period and we  
20 expected that this would increase.

21 We also indicate that there is a stocking  
22 of poplar at 11 per cent, again this is a result of  
23 natural regeneration and came as no particular surprise  
24 to us. The 11 per cent poplar stocking was not  
25 considered to be a particular problem at this time,



1       although it was -- it did have the potential to become  
2       a problem as far as competition is concerned at a later  
3       date.

4                   Q.   If I could stop you there just for a  
5       moment, Mr. Ferguson, and dealing with the second year  
6       stocking assessment itself, are they routinely carried  
7       out by the company today?

8                   A.   No, they are not.

9                   Q.   Why is that?

10                  A.   Well, as I indicated, one of our  
11       primary reasons for starting the -- doing the second  
12       year stocking in the early years of the FMA was to help  
13       us as a company, our staff, to gain an understanding of  
14       what worked on what sites and what did not work on  
15       other sites.

16                  Having conducted these over a period of  
17       close to 10 years, we have accumulated a database, I  
18       guess, that our people are now familiar with what is  
19       effective on what sites. We have found that these  
20       surveys do not provide an accurate indication of what  
21       the fifth-year stocking on a particular site will be,  
22       we have not found them to be good indicators of  
23       competition levels.

24                  I guess, in short, we have gained the  
25       information that we wished to gain from conducting

1       these sites and they no longer serve a great deal of  
2       purpose to us.

3                   Q.   This was a seeding stocking  
4       assessment.  Was there any magic from your point of  
5       view in it being conducted in the second year?

6                   A.   Well, magic is an interesting word.  
7       I guess the magic is in the second year we could find  
8       some seedlings in the first year.  The first year of  
9       the FMA we did in fact attempt to conduct stocking  
10      assessments one year after renewal treatments and a  
11      number of us went out and wasted several days in the  
12      first fall trying to find seedlings which could not be  
13      found, so we abandoned the stocking assessments in the  
14      first year and undertook to take them in the second  
15      year.

16                   As I say, in the second year we were able  
17      to find stocking results, but as time went on we found  
18      that they did not represent what stocking at year five  
19      or the final stand would represent and the utility of  
20      them and it now no longer seems to be of great  
21      significance.

22                   Q.   Could it as easily or as productively  
23      been done in the third year as opposed to the second?

24                   A.   Yes, there is nothing particularly  
25      special about second year versus third year.

1 Q. With respect to the results that are  
2 set out at page 42 and indicated on the overhead, was  
3 the company satisfied with it?

4 A. At this point in time, no. We are  
5 quite concerned with these results. In fact, at the  
6 second year this project was red flagged, so to speak,  
7 as a problem area which would bear further watching and  
8 that being for two reasons.

9 Firstly, that the stocking levels did not  
10 meet the minimum requirements of the FMA; and,  
11 secondly, that there was some poplar on the site which  
12 might develop into a competition problem.

13 So, as I say, this was red flagged as a  
14 potential problem area and was watched over the period  
15 of the next three years up until the formal fifth-year  
16 assessment was conducted five years after renewal had  
17 taken place.

18 Q. And what did the fifth-year  
19 assessment indicate in comparison to these results?

20 A. Okay. Perhaps again the best way to  
21 illustrate the fifth-year results is by way of an  
22 overhead and I have an overhead here which will compare  
23 both the second and fifth-year results.

24 Q. And, again, are the fifth-year  
25 stocking results set out in the case study, Mr.

1 Ferguson?

2 A. Yes, the fifth-year stocking results  
3 are in the case study at page 44 of that document.

4 As is evident from the overhead, jack  
5 pine stocking had increased from year two to year five  
6 to 45 per cent from 32 per cent, black spruce stocking  
7 increased from two per cent up to seven per cent and  
8 total conifer stocking, that being the spruce and jack  
9 pine stocking combine, had increased to 50 per cent  
10 from 34 per cent.

11 Also worth noting is an increase in the  
12 poplar stocking of 28 per cent from 11 per cent. At  
13 this point in time the minimum stocking standards as  
14 required by the FMA have been surpassed. I --

15 Q. I'm sorry.

16 A. I was just going to elaborate on  
17 this.

18 Q. All right. Please do.

19 A. The jack pine stocking on the site up  
20 to 45 per cent appears to be a result of delayed  
21 germination of the seed which was present on the site  
22 prepared patches.

23 This supports the possibility, as was  
24 considered in 1984, that some of the seed dropped by  
25 the Bracke had in fact been buried more deeply and this



1 took additional time to germinate and grow.

2 The black spruce on the site, as  
3 expected, has shown an increase to 7 per cent in  
4 stocking and is likely to continue to increase.

5 The poplar, although a significant  
6 increase in stocking has occurred, 28 per cent versus  
7 11 per cent in year two, is still not posing a  
8 competition problem, in 1987 this would be.

9 The poplar present is not in a dominant  
10 condition. In most cases they are on the same plot as  
11 the conifer species, therefore the poplar still had the  
12 potential to become a problem and would bear some  
13 watching. No further treatment was required at that  
14 particular time.

15 Q. How would you account, Mr. Ferguson,  
16 for the difference in results between second and fifth  
17 year based on these stocking assessments?

18 A. Well, the ingrowth of black spruce,  
19 as I mentioned, is primarily -- well, totally from  
20 natural methods and I suspect that natural seeding of  
21 spruce would be from standing seed sources on the  
22 periphery of the case study block.

23 The increase in poplar is also as a  
24 result of natural regeneration, primarily associated  
25 with the sprouting from the poplar that was there. The

1 jack pine I believe is almost entirely as a result of  
2 delayed germination of the seed which was present on  
3 the site in 1984 but did not term germinate until after  
4 that time.

5 Although we did measure the location of  
6 the seedlings on the site preparation -- or off the  
7 site preparation in 1984, this was not done with the  
8 fifth-year survey in 1987 for a couple of reasons.

9 The fifth-year survey is strictly a  
10 measurement of the stocking and nothing else really and  
11 there was no requirement for us to do that type of  
12 thing.

13 The second reason being that in the  
14 majority of cases it is not possible to discern whether  
15 or not the seedling is actually on site preparation or  
16 off site preparation five years after the fact. The  
17 site prepared patches that's created by the Bracke are  
18 larger grown over by ground vegetation. They have  
19 slumped and been weathered and in most cases the site  
20 preparation is no longer visible.

21 However, having visited the site and  
22 noting that there does appear to be a linear  
23 relationship as to the arrangement of the trees - by  
24 that I mean they are essential in rows and fairly well  
25 spaced at the two metre spacing as site prepared by the

1 Bracke - I would conclude that the majority of  
2 ingrowing of the jack pine is in fact on the site  
3 prepared area and the result of the site preparation  
4 and seeding that took place in 1982.

5 Q. Was there after the fifth-year  
6 stocking assessment another survey done of the area to  
7 see if the stocking conditions had changed?

8 A. Yes, a subsequent survey was  
9 conducted in 1989. This indicated again a slight  
10 increase in conifer stocking, combined conifer stocking  
11 up to 55 per cent with the ingrowth continuing to be in  
12 jack pine, the spruce and poplar levels remaining  
13 constant, no change from the fifth-year stocking  
14 levels.

15 At this time perhaps I could show a  
16 number of photos which would give the Board an  
17 indication of the condition of the site as seen in  
18 1989, seven years following site preparation.

19 Perhaps since I have trouble with this  
20 laser printer I will just move up and point. I'm not  
21 sure that I have enough hands here but we'll try.

22 This first photo is photo 5.2 from the CP  
23 Forest Products case study document. I believe the  
24 Board has already seen a view of this photo presented  
25 by Mr. Roll, perhaps I can point out another couple of

1 aspects that he may have glossed over.

2 This is in fact a representation or a  
3 photo of regeneration on a tertiary road. You can see  
4 from the gravel portion across here the old roadbed,  
5 the jack pine growing in the roadbed itself. In fact,  
6 we have a spruce blown tier in the foreground and that  
7 is probably a result of seeding from the black  
8 spruce -- the larger black spruce in the background  
9 which we continue to see into the site over an extended  
10 period.

11 This is photo 5.3. Again, I believe the  
12 Board may have seen this in the case study overview.  
13 Again, a picture representing regeneration within the  
14 case study block on a tertiary road. You can see Mr.  
15 Moore standing in the background on the road itself,  
16 this being part of the road here as well. (indicating)  
17 However, right within the road itself is regeneration  
18 of jack pine and you can see one of the leaders growing  
19 quite well.

20 Q. When you said, Mr. Ferguson, this  
21 being part of the road, you were referring to the  
22 right-hand side of the photograph?

23 A. Yes, you can see -- actually, you can  
24 see a tier on the right-hand side, some of the old road  
25 surface as well here on the left. (indicating)



1 Q. Thank you.

2 A. This is photo 8.11 which just will  
3 give you some indication of the general condition of  
4 the case study block. Jack pine growing pretty well  
5 right across the photo, you can see from the leader  
6 growth the shoots on the jack pine growing well.

7 I might point out that all of these  
8 photos were taken in June of 1989. As well, you can  
9 see evidence of some of the poplar stocking on the  
10 site. However, as I mentioned earlier, while the  
11 poplar is there it is not suppressing the conifer  
12 growth in any way. As I say, good leaders on the  
13 conifer species are not being hindered by the poplar  
14 present on this particular site.

15 Again, I believe this will be 8.2 and,  
16 again, just a representation of the case study block  
17 with the jack pine growing well, a few residual poplar  
18 and some pots growing on the site as well.

19 In effect, what we are achieving here is  
20 a stand which would be within the jack pine working  
21 group but will have a component of poplar in and a  
22 minor component of spruce as well.

23 Here is an overview of the case study  
24 block looking from east to west. The main access road  
25 or tertiary road but the road to provide the main

1 access into the block across the centre of the picture,  
2 another road here, these two being roads which were not  
3 site prepared and seeded. There are a number of other  
4 roads that were within the case study block which are  
5 virtually impossible to discern at this time. You can  
6 see the jack pine growing throughout the block.

7 (indicating)

8 Q. What photo number was that, Mr.  
9 Ferguson?

10 A. I am losing count. I believe we are  
11 up to 9.1.

12 Q. Thank you.

13 A. Again, just an illustration of the  
14 jack pine showing the leader growth growing well and a  
15 few poplar scattered throughout the stand, not impeding  
16 the conifer growth but present within the stand.

17 MS. CRONK: For the record, Madam Chair,  
18 that was photo 9.3.

19 MR. FERGUSON: That's correct. I believe  
20 here we are up to photo 9.6. The purpose of this is  
21 just to illustrate again the result of the delayed  
22 germination of the jack pine. This in fact is probably  
23 a two year old seedling present on the site in June of  
24 1989. I believe Mr. Roll may have showed you this  
25 photo as well.

1                   Again, just an illustration of the jack  
2 pine and poplar growing in combination with each other  
3 on this particular case study site. Again, the poplar  
4 not creating problems for the conifer species.

5                   Q. How tall are the conifer specie trees  
6 in that photograph?

7                   A. The conifer species would be  
8 something just over two metres at this point in time.

9                   MS. CRONK: That was photograph 9.5,  
10 Madam Chair.

11                   MR. FERGUSON: Correct, 9.5. This being  
12 the final photo which I wish to show, photo 9.7.  
13 Again, the spruce volunteer coming in, possibly a two,  
14 three year old seedling present on the site in 1989.  
15 As I indicated, spruce should continue to fill in some  
16 of the gaps within the stand over an extended period,  
17 potentially forming a minor component in the stand at  
18 maturity. I believe that concludes my slides.

19                   MS. CRONK: The last slide was 9.7, Madam  
20 Chair, for the record.

21                   Q. Mr. Ferguson, you indicated earlier  
22 that the sample plots undertaken on the site showed  
23 that a coverage of 104 per cent had been achieved.

24                   Just looking at the note I made of your  
25 evidence in that regard, how can you get 104 per cent

1 coverage?

2 MR. FERGUSON: A. If in fact a constant  
3 two-metre spacing between all of the site preparation  
4 wasn't maintained - by that I mean that every time the  
5 Bracke made a pass on the cut-over it is exactly two  
6 metres from the last pass - that would represent 100  
7 per cent coverage.

8 The fact that the coverage is 104 per  
9 cent would indicate that at some point in time the  
10 operator has come slightly closer than two metres to  
11 the previous pass. So, in effect, over the area of the  
12 case study some of the passes must have been something  
13 less than two metres apart and this is to be expected,  
14 that they may be as a result of having to go around a  
15 stump or result of turning or possibly just getting a  
16 little too close in some situations.

17 Q. Was the company satisfied with the  
18 results achieved by the time of the fifth-year stocking  
19 assessment on the case study area?

20 A. Yes, we are satisfied with the  
21 stocking levels that were present in the fifth year.  
22 We would have preferred possibly that we had achieved  
23 those stocking levels a little sooner would be our only  
24 consideration.

25 Q. As a result of the activities that



1 were conducted in a renewal context on this case study  
2 area, has your company in any way changed its renewal  
3 practices?

4 A. Yes, we have. If I could elaborate  
5 on that a little. The evaluation of results on this  
6 case study and in other renewal projects conducted  
7 during the initial years of the forest management  
8 agreement have resulted in changes to regeneration  
9 methods and techniques.

10 Simultaneous seeding with the Bracke, as  
11 conducted in the early years of the FMA, does not prove  
12 it to be a consistent regeneration method, although in  
13 almost all cases the minimum stocking standards have  
14 been achieved using this method.

15 Therefore, as a result of this being  
16 inconsistent, this treatment has been restricted and is  
17 now used only in the spring and early summer period.

18 Q. Could you speak up just a bit, Mr.  
19 Ferguson, we have a little--

20 A. A little competition?

21 Q. A little vegetation competition in  
22 the back here. If you could speak up just a little.

23 A. Yes, as I indicated, the use of the  
24 Bracke with site preparation and seeding has been  
25 restricted to the spring and early summer period.

1                   Seeding rates have been increased to 12  
2                   to 15 seeds per patch, whereas in the earlier years we  
3                   were using 6 to 8 seeds per patch. We have become very  
4                   selective of the sites on which we apply this  
5                   treatment. We know when we use this renewal method on  
6                   fresh sandy, loam sites for competition levels they are  
7                   expected to be low and this amounted to approximately  
8                   200 hectares on the English River Forest in 1989, that  
9                   being in the order of 15 to 20 per cent of what we  
10                  would have used this technique for in, say, 1981 or  
11                  '82.

12                  However, Canadian Pacific is committed to  
13                  low cost regeneration methods where such methods can be  
14                  expected to be successful and we still feel that there  
15                  may be significant gains to be achieved through  
16                  simultaneous seeding, that being seeding with the site  
17                  preparation. Therefore, the company has undertaken  
18                  some experimental projects to determine how, where and  
19                  when this method could be effectively used.

20                  The effects of seeding on different  
21                  sites, microsites, different rates and at different  
22                  times of the year is being evaluated. Monitoring of  
23                  these experimental types projects is still ongoing and  
24                  the results are not overly conclusive to date.

25                  Q. Are there other forms of current

1 research and development initiatives ongoing with  
2 respect to renewal activities by your company at the  
3 moment?

4 A. Yes, we are doing some experimental  
5 work with a seed which had been pelletized with a clay  
6 coating. There are a number of advantages to be  
7 expected from this type of treatment. Firstly, we felt  
8 that coating the seed with clay would have the  
9 advantage of the seed being heavier and less  
10 susceptible to wind as it was dropped, therefore, more  
11 likely to fall where we wanted it to fall.

12 A pelletized seed is a little larger and  
13 more visible, more easily monitored as to where it does  
14 fall, less likely to be destroyed by birds or rodents  
15 and we have also have the advantage of delaying  
16 germination during periods of drought and that will  
17 prevent the seedling from germinating and then being  
18 dried out and dying immediately thereafter.

19 Again, information on these projects is  
20 not overly conclusive and for this reason we choose to  
21 err on the side of caution and at the present time we  
22 are opting for more conventional regeneration  
23 techniques.

24 Canadian Pacific has also been involved  
25 in the development work on a pneumatic seeder that is

1 known as the Meridan seeder and it has been developed  
2 in conjunction with a forwarded scarifier which the  
3 company has also developed, that being a joint project  
4 between Canadian Pacific and Northern Engineering.

5 Q. Sorry, what did you call it? It was  
6 a Meridan?

7 A. Meridan.

8 Q. Meridan. Seeder?

9 A. Correct, yes.

10 Q. Thank you.

11 A. That is a pneumatic type seeder which  
12 is seen as being somewhat more reliable than the Bracke  
13 type seeder which is strictly a mechanical type seeder.

14 Q. Are those trials ongoing now?

15 A. Yes, that's correct, although the  
16 seeder we now feel has evolved to the stage of  
17 operational trials and they are underway with that or  
18 will be underway with that again shortly this year.

19 Q. Does your company as well  
20 participate, Mr. Ferguson, in tree improvement  
21 programs?

22 A. Yes, that's correct. Canadian  
23 Pacific is involved in tree improvement programs both  
24 with jack pine and black spruce and that involvement is  
25 both here in Thunder Bay and in our operations in



1 Dryden.

2 Q. Thank you, Mr. Ferguson. Those are  
3 the questions I propose to put to you on your case  
4 study.

5 MS. CRONK: Madam Chair, I note that we  
6 neglected to make copies for the Board and the other  
7 parties of the last overhead that Mr. Ferguson referred  
8 to, that being the overhead comparing the second year  
9 stocking assessment results with those of the fifth  
10 year.

11 If you could reserve an exhibit number we  
12 will have copies made and provided to the Board and  
13 other parties if that would be appropriate.

14 MADAM CHAIR: Thank you. That will be  
15 Exhibit 1145.

16 MS. CRONK: Mr. Freidin is suggesting  
17 that we give it a title. It should be Canadian Pacific  
18 case study stocking results second and fifth year.

19 ---EXHIBIT NO. 1145: Hard copy of overhead re Canadian  
20 Pacific case study stocking  
results second and fifth year.

21 MS. CRONK: I note, Madam Chair, the time  
22 and I didn't know whether the Board wished to take a  
23 break this afternoon or not.

24 I am about to ask Mr. Gemmell to commence  
25 his case study in terms of renewal activities. He will

1 certainly not finish it today, but I am prepared to  
2 start it. I wonder if you wish a short break before he  
3 does so or would you prefer that he not start it today  
4 at all?

5 MADAM CHAIR: Yes, I think we only have  
6 another 20 minutes or so this afternoon, so would you  
7 like to continue.

8 MS. CRONK: That will be fine. Thank  
9 you.

10 Q. Mr. Gemmell, could we turn next to  
11 you then, please, and to your case study which you have  
12 explained to the Board previously is case study 4D and  
13 we know after today several times it involves the Clay  
14 Belt, but I would like you, if you would, please, to  
15 concentrate specifically on the renewal activities in  
16 the case study and perhaps commence by refreshing our  
17 collective memories as to precisely where the case  
18 study area is?

19 MR. GEMMELL: A. Yes. Madam Chair, I am  
20 going to make my best effort to finish this in 20  
21 minutes.

22 The entire agreement area is situated  
23 within the area of the boreal forest identified as the  
24 northern Clay Belt. The Iroquois Falls mill prefers  
25 black spruce newsprint as has been said before and

1 black spruce management, therefore, is a priority.

2 To refresh the Board's recollection  
3 regarding the case study area I would like to refer to  
4 Exhibit 1109. I am sure the Board is well aware of the  
5 Clay Belt by now stretching from Hearst in the west to  
6 the Quebec border. The Abitibi FMA, the Iroquois Falls  
7 Forest is coloured in yellow here and is located  
8 adjacent to the Quebec border.

9 Q. Were you personally involved, Mr.  
10 Gemmell, in the renewal activities on this case study?

11 A. Yes, I was.

12 Q. How long have you been involved in  
13 renewal activities in the area of the undertaking in  
14 the course of your career?

15 A. I have been working in the specific  
16 area of the Clay Belt for over 20 years.

17 Q. Fine.

18 A. Now if I could just show an overlay  
19 specifically of the Camp 33 area. Camp 33 was the  
20 operating camp at the time of this case study area, in  
21 fact the area that you see on the entire screen  
22 represents maybe a third of the entire Camp 33  
23 operation.

24 Camp 33 was located on Michel Lake Road  
25 just south of the case study area. The road running

1 south/north, the Michel Lake Road, and Camp 33 is the  
2 this area outlined in black adjacent to Michel Lake  
3 Road.

4 The square area includes block A and  
5 block B of the case study area. Block A is an upland  
6 clay site, and block B, which is also in that square,  
7 is one of the lower sites, and the long black area to  
8 the east of that is block C.

9 MS. CRONK: For your assistance, Madam  
10 Chair, the overlay Mr. Gemmell has up is Figure 5 from  
11 the case study.

12 MADAM CHAIR: Thank you.

13 MS. CRONK: Q. Would you describe for  
14 the Board, Mr. Gemmell, please, the nature of the  
15 stands in the case study?

16 MR. GEMMELL: A. Yes, I can. This is --  
17 in fact this is the new exhibit, I think so. Is that  
18 the number that was given this morning that...

19 Q. Yes. If you will give me a moment,  
20 Mr. Gemmell, I will get that.

21 A. I think it's Exhibit 1141 from this  
22 morning. Would that be correct?

23 Q. That could very well be correct. If  
24 I could just have a minute I will just check for you,  
25 Mr. Gemmell.



1 MADAM CHAIR: Yes, it is, Mr. Gemmell.

2 MS. CRONK: Thank you, madam Chair. I  
3 can't find that piece of paper at all.

4 Q. And I am sorry, you were about to  
5 describe the conditions on these stands?

6 MR. GEMMELL: A. These are the stands  
7 which exist, the major stands of the case study area,  
8 block A which is the upland spruce area occupies an  
9 area of 67 hectares. The major FRI stand is stand No.  
10 36, and there is a mixed wood component to the stand;  
11 namely, black spruce with a component of poplar,  
12 balsam, fir, and white birch. The age of the stand as  
13 identified in the FRI was 120 years and it is a site  
14 class 1 stand.

15 The lowland spruce sites occur in blocks  
16 A, B and C. The area of B is 60 hectares and the area  
17 of C is 139 hectares. Within block B the major stand  
18 is FRI stand No. 33, and within block C there are two  
19 major stands, 57 and 38. All three stands are  
20 identified as 100 per cent black spruce, they are  
21 identified on the FRI as 100 years old, and they will  
22 fit into the site class 2 category.

23 Q. And what were the renewal options  
24 available on the case study area, Mr. Gemmell?

25 A. First of all, if I could again just

1 show Figure 7 from the case study just once again to  
2 illustrate the location of block A, which is the upland  
3 clay site again; block B which is the lower site, and  
4 the black dots represent the group seed trees which  
5 were the seed source for the regeneration in that area,  
6 and block C, which is the alternate strip cut, the  
7 first cut which took place in 1979 and the second cut  
8 took place in 1986.

9 And I can best describe the so-called  
10 silvicultural treatment which took place by means of  
11 Appendix 1 in the case study. At the far left here is  
12 category D which is mineral soils, and under D2 is the  
13 deep, well-drained soil which includes site class x, 1  
14 and 2. Block A fits into that category under spruce  
15 working group.

16 And just to go across to the far side of  
17 the silvicultural prescriptions, the renewal treatment  
18 was to site prepare and plant 700 trees per acre after  
19 clearcutting.

20 And again as part of Appendix 1 under  
21 category A under organic soils, A2 represents  
22 moderately to poor drained organic soils, which is site  
23 class 2 black spruce lowland, and following across the  
24 method of harvest which related to the renewal was (1)  
25 to clearcut in alternate strips or blocks, which was

1 the block C, and under Item (2) was to cut in groups of  
2 seed trees, which was block B.

3 Q. So that I understand, Mr. Gemmell,  
4 were the site conditions that you have just described  
5 from Table 1 of the ground rules, the last evidence you  
6 gave, did that apply to blocks C and D -- I am sorry, B  
7 and C?

8 A. B and C. In the one case -- both  
9 cases it was natural regeneration; in the one case it  
10 was clearcut to leave group seed trees for natural  
11 regeneration, and in block C it was cut in alternate  
12 strips for natural regeneration.

13 Q. Thank you.

14 A. And in both cases there was no site  
15 preparation.

16 Q. Well, dealing just with block A then  
17 where site preparation was involved, what were the  
18 alternatives available with respect to site preparation  
19 on that block?

20 A. I will return to my seat for a  
21 minute. Referring to block A, block A was an upland  
22 clay site which contained fairly heavy concentrations  
23 of slash and brush after harvesting. The alternatives  
24 that were available were (1) to winter shear blade, (2)  
25 to summer blade, or (3) to prescribe burn.

1 Summer blading was not an option on this  
2 type of site because the summer blading technique  
3 exposes too much clay mineral soil and that type of  
4 exposure of clay mineral soils is undesirable because  
5 the exposure of the clay leads to problems planting,  
6 heaving after the plant or stock dessication because of  
7 the drying out of the soils. So summer blading was  
8 rejected as an option.

9 Prescribed burning. Although prescribed  
10 burning is a possibility for sites such as block A,  
11 this method has not been used often, especially by  
12 Abitibi-Price at Iroquois Falls, the major problem  
13 being the unpredictability of results, unpredictability  
14 of factors such as weather and manpower.

15 Mr. Nicks alluded to the problems related  
16 to the unpredictability because of the requirement of  
17 the fire organization on wild fires. So prescribed  
18 burning was not considered as an alternative here or  
19 was rejected as an alternative.

20 Shear blading was and still is the  
21 preferred site preparation choice for a number of  
22 reasons. No. 1, the frozen ground conditions in the  
23 clay belt between January and March make it possible  
24 for heavy equipment to work both the clay soils and the  
25 deep peat soils to float on those soils without -- with



1 the objective of removing slash and competition and, at  
2 the same time, not creating any disturbance to the soil  
3 surface.

4 In dealing with blocks B and C, the low  
5 sites, an assessment after the harvest indicated that  
6 there was considerable advance growth present on both  
7 these sites and it was determined there that in both  
8 situations site preparation was not required and would  
9 not be useful in creating the new crop. If site  
10 preparation had been required, winter shear blading  
11 would have been the technique used in those cases.

12 Q. Can you illustrate for the Board, Mr.  
13 Gemmell, what was involved in the site preparation on  
14 block A?

15 A. yes, and I can illustrate this with a  
16 couple of slides. I am sure the Board has seen some  
17 slides of shear blading previously in the Ministry's  
18 presentations.

19 This is just an indication. This type of  
20 shear blading technique is used almost exclusively in  
21 our area for site preparation because, as I have  
22 described, the sensitivity of both the upland and the  
23 lowland sites.

24 The technique is just to work in straight  
25 corridors and the snow and debris is pushed into the

1 windrows. This is slide 7.2 in the case study. This  
2 is a little wider view of the results and, in this  
3 case, these slides are not of the case study itself but  
4 are fairly close to the case study area and are quite  
5 typical of the shear blading technique which we do.

6 The Board will note the parallel  
7 corridors, the removal of the brush but at the same  
8 time the organic layer is left in tact. This is slide  
9 7.3.

10 This is slide 7.5 and it gives an  
11 indication in the summer of the same area and the  
12 important point, as I have mentioned, is to move the  
13 slash and competition but at the same time to ensure  
14 that the organic duff layer remains in tact for the  
15 subsequent planting because that is very important for  
16 the survival and growth of the trees.

17 Q. Could you turn next then, Mr.  
18 Gemmell, to the regeneration aspects of the case study  
19 and could you outline for the Board with respect to  
20 each block what were the alternatives and what was in  
21 fact done, and perhaps you could start again with block  
22 A?

23 A. Yes, I can. As I was indicating, the  
24 silvicultural prescriptions from Appendix 1, the  
25 regeneration alternatives for the block A, the upland

1 sites, were to plant either bareroot or container  
2 stock. Container stock was chosen over bareroot  
3 because the competition and slash was sufficiently  
4 reduced by the site preparation technique and, where  
5 that takes place, the preference is the container  
6 stock, namely because container stock is considerably  
7 cheaper both to grow and to plant and the container  
8 stock has proven to be quite successful on these sites.

9 Blocks B and C, the lowland sites, were  
10 harvested in a manner which would promote natural  
11 regeneration and, as I have mentioned, block B was  
12 harvested for this purpose using group seed trees to  
13 regenerate naturally to supply the seed source. And  
14 again, block C was harvested by leaving alternate  
15 blocks for natural seeding.

16 And now I would like to illustrate by  
17 some more slides few things about the renewal program.

18 I am sure the Board has seen many slides  
19 of planting techniques, so I have just chosen three  
20 just to illustrate a few of the points or the methods  
21 that we use in this case.

22 This is a holding area for the paper  
23 pots. It has to be located close to a water supply and  
24 there is a whole system comes up to the middle of the  
25 holding area, and you can see a sprinkler system such

1 as you use on your front lawn to keep the trees moist  
2 until they are transported to the planting area. This  
3 is slide 7.8.

4 Slide 7.9 I think has been illustrated  
5 before. It's a technique which we developed with the  
6 use of our equipment that normally is used on the  
7 harvesting operations. The wide tires are attached to  
8 the Timberjack skidder and a system of -- a system is  
9 attached to the back there to transport the stock out  
10 into the field.

11 Generally speaking we put in tote roads  
12 perpendicular to the shear bladed corridors about of  
13 three or 400 feet and this allows the men to get access  
14 to the strips also allows the wide-tired skidder to get  
15 access to the individual strips to supply the men with  
16 the paper pots.

17 Q. And what photograph number is that,  
18 Mr. Gemmell?

19 A. This is photograph 7.9. This is just  
20 an illustration. In some areas -- that is not a  
21 nursery stock that is meant just to hold that box and  
22 stabilize that box, but the box contains the paper  
23 pots.

24 In some areas where we have not gained  
25 access or access is relatively a long distance, we use



1 a helicopter system to deliver men and trees to the  
2 site. And as an example, this year we have an area of  
3 approximately 200 hectares that was a winter cut of  
4 blowdown, but a relatively good site and it's within  
5 about 15 miles of Iroquois Falls, the Town of Iroquois  
6 Falls. So we consider that a relatively -- we have  
7 made a good decision to plant a productive site without  
8 access and, therefore, it's worth our while to use a  
9 system such as the helicopter to gain access for the  
10 men and the paper pots.

11 Q. Would you use helicopters to  
12 transport either personnel or planting stock where road  
13 access was available?

14 A. No, no. This is quite expensive. I  
15 think it's in the neighbourhood of 50 or \$60 dollars a  
16 thousand to carry out this timber management. So it's  
17 only done in very specific high priority areas.

18 Q. And what photograph number is that,  
19 Mr. Gemmell?

20 A. This is photograph 7.10.

21 Q. Thank you. Mr. Gemmell, if you could  
22 turn next to the results in the case study area - you  
23 might just make your three o'clock objective - and if  
24 you could outline for the Board, if you would please,  
25 what assessments were conducted on this case study area

1 and what they indicated?

2 A. This is Figure 7, just once more to  
3 indicate the three major areas. Block A is the upland  
4 clay again, and block B is the lower group seed tree  
5 area, and block C is the alternate strip cut.

6 In block A there were survival plots  
7 established at the time of planting which is the normal  
8 procedure and after five years the survival of the  
9 planted stocks in block A was 91 per cent.

10 Under Item 2 on the left-hand column are  
11 the stocking survey results after five years, and block  
12 A after five years, the stocking assessment amounted to  
13 65 per cent stocking; in block B the results of the  
14 natural seeding was 51 per cent; and block C was 54 per  
15 cent.

16 And within the Township of Raven, Raven  
17 Township, which was the same township as the case  
18 study, there were 797 hectares altogether of clearcuts  
19 of low sites and they also are naturally regenerating  
20 without a specific seed source such as block B and C,  
21 but had considerable advance growth at that time of  
22 harvest. And, in that case, the results of those  
23 areas, the average result was 50 per cent.

24 Q. Just before you leave that, Mr.  
25 Gemmell.

1 MS. CRONK: That, for the record, is part  
2 of the exhibit, that being the overhead, a photocopy of  
3 it, is the second page of Exhibit 1141.

4 Q. And just looking at the results,  
5 block B then being the seed tree area achieved a 51 per  
6 cent stocking result at fifth year compared to 65 per  
7 cent on the planted area, that being block A?

8 MR. GEMMELL: A. That's correct.

9 Q. All right. And it's block A to block  
10 C that are relevant to compare, the strip cut block to  
11 the planted block?

12 A. That's correct. Do I have time to  
13 show a few slides of...?

14 MS. CRONK: Madam Chair?

15 MADAM CHAIR: Please go ahead, Mr.  
16 Gemmell.

17 MR. GEMMELL: Thank you, Madam Chair.

18 MS. CRONK: Q. Just before you get into  
19 a description of the slides, Mr. Gemmell - and I am  
20 still looking at the stocking results, you don't have  
21 to put it back up again - but on block A where a 65 per  
22 cent stocking level was achieved, what does that  
23 represent in terms of trees per hectare? Can you help  
24 with that?

25 MR. GEMMELL: A. Yes. The 65 per cent

1 represents approximately 1,600 trees per hectare.

2 Q. And how would that compare to block  
3 B, the seed tree area?

4 A. Okay. Block B and C are the natural  
5 regenerating areas and the major portion of that  
6 regeneration occurred from advance growth and in fact  
7 this is an example of that advance growth. And what  
8 the black spruce advance growth does is grow in in  
9 layerings and is very clumped.

10 In that case, this is block B, and this  
11 advance growth was there at the time of harvest. The  
12 advance growth could be anywhere from one year old  
13 to -- could be 30 years old easily, just because it  
14 establishes and stays under the crown but does not grow  
15 very much until the area is harvested.

16 So in this case this was 51 per cent  
17 stocked. If it were just one tree per plot it would be  
18 about 1,200 trees per hectare, but there are at  
19 least -- I just estimated at least five trees per acre  
20 in a block which gives a density of something like  
21 6,000 trees and that is very characteristic of these  
22 low sites.

23 The key to these low sites is that during  
24 the harvest operation the harvesting be carried out  
25 such that the advance growth is left in good condition



1 and it can be done in two ways: One is the winter  
2 harvest where most of the advance growth is protected  
3 under the snow or, alternatively in the summer harvest,  
4 we have the high flotation equipment and we organize  
5 the harvesting equipment such that the advance growth  
6 is protected. And I think that was described last week  
7 in the harvesting case.

8 Q. What photograph number is this, Mr.  
9 Gemmell?

10 A. I have now lost my -- this is slide  
11 9.4.

12 Q. And how long after treatment of the  
13 site was this photograph taken?

14 A. This photo was taken in 1989 and that  
15 is nine years after harvest.

16 This is slide 9.5 and again this is block  
17 C and shows the advance growth in block C similar to  
18 block B.

19 Q. And again, how many years after  
20 harvest was this photograph taken?

21 A. This is the same, this is -- the  
22 photo was taken in 1989 which is nine years after  
23 harvest.

24 This is slide 9.7 and it's just an  
25 indication -- this happens to be one of the winter

1 roads which accessed the case study area, the winter  
2 road, the spagnum seedbed establishes after the road is  
3 not used any longer, and this is a natural seeding and  
4 establishment of spruce from natural seed.

5 And the rod there is at four feet, the  
6 actual regeneration is -- black spruce is a little over  
7 a foot in height. So that in comparison to the advance  
8 growth which is present at the time of harvest, there  
9 is quite a difference in growth, and that is why the  
10 preservation of that advance growth is very important.

11 And finally, slide 9.11 is an indication  
12 on the upland clay site of the planted area, and this  
13 is the planted stock and the rod is at eight feet  
14 there, the planted stock which you see, the two spruce  
15 you see there, are over -- they are approximately nine  
16 feet high. And this is the more productive upland site  
17 and obviously the trees have established very well.

18 Q. And how many years after harvest and  
19 plant was that photo taken?

20 A. Again, this is nine years after  
21 harvest. This picture was taken in 1989.

22 Q. And can you compare the height and  
23 condition of the trees shown in this slide to the  
24 conditions depicted in slide 9.5 being block C and 9.4  
25 being block B; that is, to the two naturally

1 regenerated areas?

2 A. Well, in this case the stock is  
3 approximately -- the best stock here is at nine feet  
4 and this was planted stock. In the case of the advance  
5 growth I was indicating the stock -- the best stock in  
6 height was at about seven feet, and that stock in age  
7 would have been anywhere from, as I mentioned, one to  
8 10, 15 or more years because it was already established  
9 at the time of harvest.

10 And the other comparison is with the new  
11 seedling which establishes on the spagnum which is  
12 about a foot in height.

13 Q. Are you in a position, based on the  
14 conditions depicted in the photographs, to make any  
15 comment about the relative diameter of the trees on the  
16 three blocks?

17 A. Well, it's difficult. The diameter  
18 is relatively small. At this stage we would be talking  
19 an inch to two inches in diameter. We haven't measured  
20 that type of...

21 Q. I see.

22 A. We haven't made that type of  
23 measurement.

24 Q. All right, thank you. Now, dealing  
25 generally with the stocking conditions on all three

1 blocks and the condition of the trees and the  
2 seedlings, Mr. Gemmell, is your company and are you  
3 satisfied with the results that have been achieved to  
4 date in a renewal context on these blocks?

5 A. Yes, we are, we are very satisfied  
6 with the results.

7 Q. And do your current operational --  
8 your current renewal operational procedures reflect  
9 those that you have described in the case study, or do  
10 they focus on any different matters?

11 A. Our current operational practices  
12 could be summarized as this: No. 1, cut as much deep  
13 peat site as possible in the winter, cut as much high  
14 ground as possible during the frost-free season, use  
15 only high flotation equipment on low sites in the  
16 frost-free season, and organize the harvesting  
17 operations on the peat sites to protect as much advance  
18 growth as possible.

19 Q. Do you still use, on these lowland  
20 sites, Mr. Gemmell, standing seed sources?

21 A. We have that as an alternative. We  
22 have not used the alternate strip or group seed tree  
23 since before 1985. We rely on the advance growth and  
24 if it isn't sufficient, then we would rely on an  
25 application of black spruce aerial seeding.



1 Q. And why is that, compared to the  
2 block you described in this case study involving the  
3 use of standing seed sources and block cut?

4 A. We feel the advantages to the advance  
5 growth, if it is sufficiently present there, that there  
6 is quite a lead time in growth there and we would  
7 prefer to protect that and have an established crop  
8 that is far ahead.

9 Look to the natural seeding. Now, the  
10 natural seeding -- there is natural seeding that is  
11 part and parcel even of the clearcuts. So there is a  
12 certain amount of seed that is there even when there  
13 isn't source within a chain, the seed is there for  
14 distances of 4 link chains. It does form part of the  
15 new crop.

16 Q. All right. Thank you very much.

17 A. Our preference is to the advance  
18 growth.

19 MS. CRONK: Thank you, Mr. Gemmell.

20 Those are my questions of Mr. Gemmell,  
21 madam Chair, Mr. Martel, the case study.

22 MADAM CHAIR: Thank you, Ms. Cronk.

23 Thank you, Members of the Panel.

24 We will reconvene in Toronto on Tuesday,  
25 morning at 8:30.

1 MS. CRONK: Thank you.

2 MADAM CHAIR: At the Board's office.

3 MS. CRONK: Thank you.

4 I am sorry, Madam Chair, just before you  
5 and Mr. Martel leave, we have copies of that last  
6 exhibit available now. (handed)

7 MADAM CHAIR: Thank you.

8 MR. FREIDIN: Madam Chair, before we  
9 depart, Mr. Dadds is here with his camera and I was  
10 wondering whether it would be appropriate for the  
11 official record that there be a photograph of all those  
12 who happen to be present on the very last day of the  
13 two-year hearing in Thunder Bay.

14 MADAM CHAIR: I think so, Mr. Freidin.  
15 This is a highly emotionally charged moment.

16 MR. FREIDIN: I was trying to arrange for  
17 a suitcase with "Toronto Bound" to be held by Ms.  
18 Swenarchuk but we couldn't find one, but I am sure she  
19 will have the biggest smile -- one of the biggest  
20 smiles in the picture.

21 MS. SWENARCHUK: If you wait a while we  
22 can bring the suitcase, it's somewhere else at the  
23 moment.

24 ---Whereupon the hearing adjourned at 3:05 p.m., to be  
25 reconvened at the Environmental Assessment Board  
Offices, Suite 1201, 2300 Yonge Street, Toronto,

1 Ontario, on Tuesday, May 8th, 1990, commencing at  
2 8:30 a.m.  
3 [copyright, 1985]  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25











